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EDITORIAL IN GLOBAL HEALTH AND DEVELOPMENT

The migrant nightmare: Addressing disparities is a key challenge for developed nations

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The benefits of economic growth over the last 25 years have been unequally distributed [1]. The gap between rich and poor is at its highest level in most Organisation for Economic Co-operation and Development (OECD) countries in 30 years. Today, the wealthiest 10 percent of the population in the OECD areas earns 9.5 times more than the poorest 10 percent [2]. Economic inequality, also called 'income inequality' or 'wealth inequality', indicates those differences in terms of different measures of economic well-being among people within and among countries. These inequalities lead to high rates of health and social problems, and low rates of social goods. Health and social problems include high levels of obesity, mental illness, homicides, teenage births, incarceration, children affected by armed conflict and drug use. Low rates of social goods translate to low levels of life expectancy by country, educational performance, trust among strangers, women's status and social mobility [3]. Greater economic inequality seems to be related to worse health outcomes, ranging from lowered life expectancy to infant mortality and obesity. Therefore, poor health and poverty do go hand-in-hand, mainly because inequality reduces social cohesion, which leads to widespread stress, fear and insecurity for everyone [4].

Health and wealth have always been closely related [5]. In this issue of the Journal of Health and Social Sciences, Musolino and Nucera explained that an unequal distribution of food resources can result in a social gradient in dietary quality that contributes to health inequalities [6]. As a consequence, a shortage of food and a lack of variety causes malnutrition and deficiency disease. On the other

KEY WORDS: health status disparities; refugees; economic development; emigrants and immigrants.

hand, it is well-known in developed countries that excess food intake contributes to cardiovascular diseases, diabetes, cancer, degenerative eye diseases, obesity and dental caries [7]. According to the World Health Organization's (WHO) definition, health inequities are avoidable inequalities in health between groups of people within countries and between countries. Health inequities arise from inequalities within and between societies that are not attributable to an individual's biological variations or free choice, but are instead attributable to external, uneven conditions that can be avoided, and which are unjust and unfair [1]. In this way, Baru and Murugan highlighted the importance of economic, social and cultural 'capital' in understanding 'health inequalities' in a developing country like Ethiopia [8]. In literature, health inequalities particularly involve specific groups of vulnerable populations such as elderly, women and young people. According to the WHO, 'gender inequality' damages the physical and mental health of millions of girls and women across the globe [9]. In this issue of the Journal of Health and Social Sciences, Garai highlighted that vulnerability to Acquired Immune Deficiency Syndrome (AIDS) in Bangladesh as well as around the world, and particularly in developing countries, is gender-related, because women have more susceptibility due to biological and socio-economic risk factors [10]. Moreover, even though most health inequalities research concentrated on younger people [11], with increasing life expectancy a greater proportion of the overall burden of ill health is being carried by older population, constituting a notable health inequality [12]. In the study of Rashedi et al., the prevalence of disability among older Iranian people was higher than that among young people. Indeed, the elderly experience high inequality in economic, political, environmental and social domains around the world [13]. As a recent report showed [14], these inequalities are reinforced by the discrimination older people already face based on their age. The elderly are perceived to be dependent and no longer capable. As a result, they are denied equal access to health care services, property rights and decent work and livelihood opportunities. Similarly, older people living with disabilities experience 'double discrimination relating to their age and disability status' [14]. And, as gender-based discrimination is intensified in older age, older women become more vulnerable to abuse and the violation of their human rights [11]. On the other hand, in well-developed countries like Italy, social issues such as alcohol and drug consumption are more common in the younger population. For this reason, Villa et al. suggested that school-education programmes could improve the level of knowledge and awareness of younger people regarding this issue [15].

Perhaps, all these papers raise a question: 'How do politics play a part in determining health inequalities'?

Over five years into the conflict, Syria's civil war has created the worst humanitarian crisis of our time, because more than 11 million people have been killed or forced to flee their homes [19]. According to Antonio Guterres, the United Nations high commissioner for refugees, the humanitarian crisis in Syria is more than a regional crisis, and it is becoming a real threat to global peace and security. This exodus of people happening in the heart of the Middle East has been a challenge for Syria's neighbours. Lebanon, Jordan, Turkey, Iraq, and to a lesser extent, Egypt are the main countries hosting refugees from Syria [20]. In the past year, more than a million refugees, asylum seekers and migrants crossed into Europe, sparking a crisis because countries are struggling to cope with the influx, and creating a division in the European Union (EU) over how best to deal with resettling these people [20]. Indeed, many Europeans consider immigration to be one of their biggest concerns. The historical referendum where the people of Britain voted for the United Kingdom's withdrawal from the EU ('Brexit'), for example, was not only caused by economic concerns, but also by a discussion of Syrian refugees [21]. In addition to a severe economic crisis which was characterized by a great recession, since 2014, Europe

has also experienced terrorist incidents such as the November 2015 attacks in Paris and the March 2016 bombings in Brussels, perpetrated in the name of the Islamic State by European fighters returning from the conflicts in Syria and Iraq. As a result, Europe is fortifying its borders with barriers in response to the migration crisis which is engulfing the continent [27]. Furthermore, the European Union does not have a comprehensive political direction, and as a matter of fact, the EU is circumventing international refugee law by introducing rules to keep refugees out of Europe. In 2015, Germany welcomed nearly one million immigrants. In sharp contrast, some members of the EU, in particular the Czech Republic, Poland, Hungary and Slovakia, refused to welcome immigrants. Therefore, as a result of the 'Dublin Regulation', which obliges the EU member state in which a refugee first arrives to take the refugee's asylum application, countries such as Greece and Italy are bearing a hugely disproportionate burden [28]. Accordingly, efforts to establish EU redistribution and resettlement programs, in which each EU member state would accept a certain number of asylum-seekers and refugees, are extremely difficult [29]. In Europe, there is debate that has dominated discussions of the so-called 'migration crisis' since last year - how to distinguish between refugees and economic migrants. Refugees are persons fleeing armed conflict or persecution. They are so recognized precisely because it is too dangerous for them to return home, and they need sanctuary elsewhere. The 1951 Refugee Convention and its 1967 Protocol as well as other legal texts, such as the 1969 OAU Refugee Convention, remain the cornerstone of modern refugee protection. On the other side, migrants choose to move not because of a direct threat of persecution or death, but mainly to improve their lives by finding work, or in some cases for education, family reunion, or other reasons. Unlike refugees who cannot safely return home, migrants face no such impediment to return. However, it is difficult to distinguish between 'genuine' refugees and economic migrants; indeed, according to the Overseas Development Institute (ODI) the motivations for both groups to risk their lives in desperate attempts to reach Europe are often very similar [30, 31].

At the end of the Second World War, the United Nations General Assembly adopted the 'Universal Declaration of Human Rights', which states (art.1): 'All human beings are born free and equal in dignity and right. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood'. The full text is published on the United Nations website. The United Nations (UN) is an intergovernmental organization which was created to promote international cooperation. It includes 193 member states. On September 19, 2016, during a meeting at UN headquarters in New York to address the question of large movements of refugees and migrants, heads of state and other government representatives adopted the 'New York Declaration for Refugees and Migrants'. They also reaffirmed the Universal Declaration of Human Rights and referenced the core international human rights treaties. In their political declaration, they reaffirmed the need to fully protect the human rights of all refugees and migrants, regardless of status. They strongly condemned acts and manifestations of racism, racial discrimination, xenophobia and related intolerance against refugees and migrants, as well as the stereotypes often applied to them. They also condemned discrimination and intolerance targeted at different religions or belief systems. The meeting participants invited the private sector and societal groups, including refugee and migrant organizations, to participate in multi-stakeholder alliances to support their efforts [25]. However, most recent statements of European politicians and other policy makers from developed nations across the world don't match the above-mentioned 'New York Declaration'. For example, in Europe and in US, several politicians announced the association between migration and the importation of infectious disease. The relation between the two is, actually, more complicated that they think [22]. According to the Centers for Di-

sease Control and Prevention (CDC), 'the large movement of people across the United States and Mexico border has led to an increase in health issues, particularly infectious diseases such as tubercolosis', but the risk doesn't stem exclusively from undocumented immigrants [23]. Moreover, according to the World Health Organization (WHO), in spite of this common perception, there is no systematic association between migration and the importation of infectious diseases. Even though communicable diseases are associated with poverty, and migrants come from communities affected by war, conflict and economic crisis, while undertaking exhausting journeys that increase their risk of being affected by communicable diseases, communicable diseases also exist in Europe, independently of migration [24].

But in truth, there is a deeper problem. The 2008-2009 global recession and the Eurozone debt crisis significantly affected European economies, decreasing growth and increasing unemployment in many EU countries, and posing a risk to the European banking system. Some EU governments imposed unpopular austerity measures in an effort to rein in budget deficits and public debt. However, economic disparities within the EU have also generated tensions and contributed to policy divisions among member states [29]. Indeed, economic globalization is thought to promote social inequalities because capital is thought to be more mobile than labor. Whereas workers find it difficult to move across borders to seek better wages and living conditions, investors can more easily shift elements of their portfolios across borders in order to evade national regulatory or tax regimes that lower their rates of return [32]. Therefore, societal tensions and xenophobia are increasing in Europe. In Germany, Sweden and other EU countries, there has been an increase in the number of violent incidents against migrants and refugees during the past few months [29]. Many analysts suggest that a strong EU 'engine' has been lacking over the past few years and some observers assert that European leaders do not have a robust or shared strategic vision for the EU [29]. Consequently, unemployment and vulnerability of the economic systems are paving the way for an increasing populism [33], providing support for the onset of rethorical policy makers and populist, nationalist, anti-establishment political parties.

Syria's dramatic war is showing that EU has frail political and economic systems. The EU is an economic and political federation of different member states and a complex governance, but it was intended as a significant step on the path toward not only greater economic integration, but also closer political cooperation. We need a real European Union, because it's urgent that European nations and other developed countries face the emerging and dramatic issues generated by migration phenomenon. Addressing this challenge is essential for the progress of humanity, including that of the European Union. Migration is – and always has been – a fundamental part of human life. Earliest human migrations across continents began 2 million years ago with the migration out of Africa of *Homo erectus*. Nowadays, in a globalized world, immigration is an unavoidable phenomenon that is increasing because of the growing numbers of grinding-poverty and wars across the world. These days, international migration is an incontrovertible proof of increasing economic disparities around the world [16]. On June 18, 2016, Pope Francis delivered an encyclical, a high-level Vatican pronouncement, which addressed the problem of global inequality [26]. Pope Francis criticized the 'economy of exclusion', saying that capitalism is often limited to a small minority can enjoy its benefits and cited 'the legitimate redistribution of economic benefits by the state, as well as indispensable cooperation between the private sector and civil society' as ways to combat poverty. Nowadays, the level of Gross Domestic product (GDP) is probably the most widely used indicator for piloting economic policies around the world. According to some studies, the potential increase in the global GDP could provide one justification for promoting international migration [17], and certain types of migration may be the best way

to significantly reduce global income inequality [18]. From a global perspective, optimal redistribution would mainly feature transfers from richer to poorer countries; therefore, the integration of migrants could be aimed to close this increasing economic inequality gap. As a consequence, the achievement of their integration could also be useful in reducing increasing levels of health inequity among the poorest and the richest countries around the world. For example, the act of migration could be considered as an opportunity for improving health, ensuring immunization for people from low income countries [22].

According to a recent report of the Overseas Development Institute (ODI), a UK's leading independent think tank on international development and humanitarian issues, since 2014, at least €17 billion has been spent on deterring refugees and migrants through tighter border controls and bilateral agreements, such as the EU-Turkey deal. According to this report, Europe needs a new approach facilitating and increasing legal pathways in order to monitor and more effectively manage flows of refugees and migrants [34]. Only coherent and adequate policies of social inclusion and redistribution of resources in Europe and in the rest of the world can decrease the widespread economic, social and health inequalities driven by economic globalization. Those inequalities carry consequences which include an increased risk of conflict and humanitarian disasters worldwide. Probably, Syria's conflict and other wars across the world are also the product of inveterate social and economic inequalities caused by the 'economy of exclusion'. 'Progress' and 'development' are similar but not exactly alike. In economy, progress is seen as the economic growth of a country while development refers to the distribution of progress to the members of society. According to a programming goal of the WHO, named 'Health For All by the year 2000', that has been popularized since the 1970s, 'scientific progress' should contribute to 'development' of the humanity improving health systems, education and infrastructure for everyone. However, the rate of that progress will depend on the political will [35]. There is an ongoing debate about whether or not science is political. I don't believe that science must dictate what politics should be, but any advances in science and technology will be completely useless without good policy makers.

Competing interests - none declared.

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VIEWPOINT ARTICLE IN FOOD SECURITY

Does science have the answer to most issues of food security?

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Abstract

Today, the attention to food security has grown with the awareness of resources' scarcity, earth excessive exploitation, population growth and climate change, all factors that are associated with an impelling food emergency. A plethora of theoretical perspectives adopted in analysing food security issue reflects in diverse normative approaches. Some focus on the rapport between population demand and food supply, seeking to reduce the former or increase the latter in order to achieve food security. Applying the technological progress of scientific research will have its positive outcomes: production will increase, keeping prices low; the limited resources will be used more efficiently, decreasing the consumption of water, energy and land; the environment will benefit from a more sustainable production. However, scientific solutions, such as population control, that do not restore individuals' entitlement to food will be ineffective in preventing food insecurity. Therefore, food security it is not achievable by the sole means of science. A greater quantity of food does not guarantee a more equal distribution of resources. Increasing food production without altering its uneven distribution will only augment this inequality, making who has access to food more secure but not helping who is currently affected by the food insecurity issues. Science can play its role, but development towards the solutions to food insecurity must be led by politics.

KEY WORDS: food security; global health; socioeconomic factors.

Riassunto

Oggi l'attenzione alla sicurezza alimentare nel mondo è cresciuta insieme alla consapevolezza della mancanza di risorse, dell'eccessivo sfruttamento della terra, della crescita della popolazione e dei cambiamenti climatici, tutti fattori associati con una impellente emergenza alimentare. Una pletora di posizioni teoriche adottate per l'analisi della sicurezza alimentare si riflettono in approcci normativi differenti. Alcuni focalizzano l'attenzione sul rapporto tra la domanda della popolazione e la disponibilità di cibo, proponendo per raggiungere la sicurezza alimentare, di ridurre la prima o di incrementare quest'ultima. Applicare in tale ambito il progresso tecnologico della ricerca scientifica darà dei risultati positivi: la produzione aumenterà, mantenendo i prezzi bassi; le risorse limitate saranno utilizzate in modo più efficiente, diminuendo il consumo di acqua, energia e terra; l'ambiente avrà dei benefici grazie ad una produzione più sostenibile. Tuttavia, le soluzioni scientifiche, come per esempio il controllo della popolazione, se non soddisfano il diritto al cibo degli individui saranno inefficaci nel prevenire la scarsità di cibo. Pertanto, la sicurezza alimentare non può essere ottenuta con i mezzi esclusivi della scienza. Una maggiore quantità di cibo non garantirà una maggiore equa distribuzione delle risorse. Incrementare la produzione di cibo senza incidere sulla sua ineguale distribuzione aumenterà solo tale disuguaglianza, rendendo più sicuro chi ha accesso al cibo ma non aiutando chi attualmente è colpito dai problemi dovuti all'insicurezza alimentare. La scienza può giocare il suo ruolo, ma lo sviluppo di soluzioni al problema dell'insicurezza alimentare deve essere dato dalla politica.

TAKE-HOME MESSAGE

Science can play its role to address most issue of food security, but development towards the solutions to food insecurity must be led by politics.

Competing interests - none declared.

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INTRODUCTION

Food is the most basic need of mankind. Well before the idea of food security was codified, man tried to secure the means of subsistence for himself and his kinship. Today, food security is acknowledgedly defined as 'physical and economic access for all people, at all times, to sufficient, safe and nutritious food to meet their dietary need and food preferences for an active and healthy life' [1]. Its achievement depends on four pillars: availability, access, utilisation and stability of the first three factors over time [2]. Given its multifaceted nature, the issues of food security are many and diverse, from mass starvation and chronic malnutrition to obesity. Its outcomes tangle with political and economic issues, impacting social fabric as well as international security. Major implications of food insecurity are: insufficiency, or lack of food availability, anxiety, derived from the struggle to gain access to limited alimentary resources, and instability of the region or the society affected [3]. The attention to food security has grown with the awareness of resources' scarcity, earth excessive exploitation, population growth and climate change, all factors that are associated with an impelling food emergency [4]. This threat to food security has been placed high on the political agenda from 2008, with the establishment of a High-Level Task Force on the Global Food Security Crisis by the World Health Organisation [5]. A plethora of theoretical perspectives adopted in analysing food security issue reflects in diverse normative approaches. Some focus on the rapport between population demand and food supply, seeking to reduce the former or increase the latter in order to achieve food security. Population control is at the root of Rev Thomas Malthus' theory, that viewed food insecurity as a natural law, and, even if politically and humanly brutal, mass starvation as the only positive check to ensure the conservation of balance between natural resources and population's force [6]. Another scientific approach targets food production. According to the New Green Revolution [7] movement, food security can be improved through a mass implementation of new technologies and scientific research, such as agro-science, genetically modified crops and clean-tech technologies, on Norman Borlaug's model of 'Green Revolution' [8]. Nobel Prize economist Amartya Sen shifted the question from the scarcity of resources to their distribution. Sen addresses the ability of the individual to access food through an 'entitlement', and the 'deprivation' consequent to entitlement's failure. According to this theory, the protection or the reconstruction of individuals' entitlement will allow access to food, ensuring a fairer distribution of resources [9]. Considering these theoretical approaches and their application to three outcomes (insufficiency, anxiety and instability) of food insecurity, this paper will argue that a merely scientific and technological solution to the issues of food security will be neither effective nor applicable. Firstly, the cause of food insufficiency is the inequality in the distribution of resources rather than the shortage of food, and therefore producing more food would not necessarily prevent famine. Secondly, the failure of accessing available food and the consequent anxiety over the battle for resources are a product of social institution, not the results of an overcrowded competition. Finally, the issues of food security are essentially political, in their consequences if not in their causes, and need to be addressed politically.

DISCUSSION

In the first place, the exacerbating of food security issues may be avoided by growing more nutritious food in crops without pesticides or chemical agents, creating more resilient and adaptable plant varieties and finding ways to reuse wasted food [10]. That being said, these procedures would not be able to prevent a food crisis, nor would they solve the current food insecurity. Equalizing food security with food self-sufficiency can be treacherous and misleading, driving the attention from the role of human agency in the issue. Applying the technological progress of scientific research will have its positive outcomes: production will increase, keeping prices low; the limited resources will be used more efficiently, decre-

asing the consumption of water, energy and land; the environment will benefit from a more sustainable production [11]. A change in the means of production is needed to face the 'perfect storm' [12], as Beddington defines it, of exponential demand for energy, water and food. Many of these technologies have already been developed, but access to them is still limited. On one hand, biotechnologies are expensive, for example genetically modified seeds cost by average twice what organic seeds cost. They provide more security and can be sold at higher prices, but for many small and middle-sized farmers the cost of a production shift is not affordable. Equally, consumer behaviour is an obstacle to achieve food security through increase in food availability, and new tendency towards civic-minded consumption is likely to discourage the purchase of Genetically Modified Organisms (GMOs) foods [13]. The gap between research and use needs to be bridged by the implementation of governmental policies. While in the United States there is a greater openness to agro-science [14], the European Union embittered since the 1990s [15]. To date, only two varieties of GMOs are permitted for cultivation and commercialisation in the Union, and six member states have banned certain types of GMOs [15], interfering with their diffusion. This demonstrates how the lack of political intention can prevent every solution, no matter how effective, to be applied to an existing problem. The condition of mass starvation is not necessarily strictly connected with a decline in food output. Famine and food export can co-exist, as happened during Bangladesh Famine of 1974 [16] and during the infamous Irish Famine of 1840s [9]. Bangladesh Famine occurred during a peak in food production, and affected only a part of the population [16]. Sen [9] and Alamgir [16] have concluded that the causes of Bangladesh Famine can be found in market speculation and 'distributional failures' of the national stock, enhanced by the absence of infrastructures and the weakness of the new Bengalese State. Similarly, Cecil Woodham-Smith declares that '*The problem in Ireland was not lack of food, which was plentiful, but the price of it, which was beyond the reach of the poor*', as the exports of food to England were constant for all the years of the famine [17]. According to the United Nations Food and Agriculture Organisation, the world produces enough food to feed everyone [18]. The way it is distributed causes 870 million people in the world to be affected by chronical hunger [18]. It has been analysed how the availability of food is not enough to prevent mass starvation. Malthusian thinkers tend to see the food security question in terms of consumption and quantity of resources [19]. Comparing a fixed necessity of food per person to the earth's resources and the figures of human development, they believe that the growth in population will lead to an apocalyptic famine [20]. Food security appears as competition among the world population to gain access to goods. On the other hand, Sen's approach to food security focuses more on the relation between individuals and commodities that can be transformed into food, rather than on the balance between quantity of demand and quantity of supply [21]. Adopting Sen's theory of entitlement, it can be said that the problem is not a specific group's or region's lack of food or overpopulation, but the lack of access to food supplies. The lack of access to food is strictly related to the failure of 'entitlements', the economic, social and legal right to a given benefit. Scientific solutions, such as population control, that do not restore individuals' entitlement to food will be ineffective in preventing food insecurity. Malthusian normative proposal assumes that, if there were less people on Earth in need of food, more people would have entitlement to access food. Under this assumption the human sociological, economic and behavioural patterns behind the problem of food insecurity are neglected. Initially, Sen's view saw entitlement as mainly regulated by economic power and legal principles [22], but as Platteau [23] and Osmani [24] have pointed out, this definition of entitlement has to be widened to include every form of socially-accepted ownership, such as particular forms of collective owner-

ship of traditional village society [23]. Gasper affirms '*beyond legal rights, effective access within institutions typically depends not only on formal rules but on particular relationships of authority and influence*' [25]. Therefore, entitlement can be influenced by a wide range of factors aside the standard purchasing power, including individual characteristics, such as seniority, ethnicity, citizenship or gender, social context and formal-legal institutional mechanisms in place [26]. The role of these social factors in enhancing, preventing or avoiding a food crisis cannot be overlooked. Social institutions, in the form of kinship, social class or shared interests' groups, nationality or ethnicity, can work both in favour or against food security. During a food crisis, the pattern of 'divided fortunes', instead of one of 'unified starvation', is often observable, with only an average of 10% of the population affected by starvation [21]. Groups tend to protect themselves, sharing resources, knowledge and technology, and during a crisis, as Rangasami affirms, 'benefits accrue to one section of the community while losses flow to the other' [27]. The difference in food availability and crisis response between the city inhabitants and the outsiders during 1974 Bengal famine [28] can be drawn as an effective example. Another observable of socially driven behaviour is the 'socio-cultural and political alienation' [21], the detachment between governed and governors, two ethnical groups, or social classes in a crisis situation. '*Ireland was considered by Britain as an alien and even a hostile nation*', writes Mokyr about the British perception of the Great Irish famine [29]. As many famines occurred under foreign dominations, the cultural and social differences influenced greatly intervention and non-intervention policies. The same under-covered racism is behind Malthus' analysis and, particularly, its modern interpretation. As well as ascribing the reason of Great Irish famine to potato-based diet [17] and the Bengal mass starvation to natives who 'breed like rabbits' [30], identifying the cause of current mass starvation phenomena in the overpopulation of affected countries reflects a vision of cultural superiority, a tendency to blame the victims and to restrict food insecurity to a 'third world problem'. On the other hand, sociological mechanisms can be used against food insecurity issues. Firstly, as suggested by Sen's work, to create 'social security systems of safety nets' [9], in order to prevent entitlement's lost. Secondly, to start a behavioural change entitlement allocation and perceived right to food, as well as the overall perception of famine. Access and availability are not the only necessary elements to achieve food security, and mass starvation is not its only outcome, albeit the most well-known. Food security is dependent on politics and has an enormous power over politics and society. For this reason, technical answers and absolute theoretical framework will always be ineffective in dealing with food insecurity. Firstly, as declared by Germany Permanent Mission to the United Nations, food security can be both a cause and a consequence of violent conflict [31]. Food security issues reflect on the region and the society, generating shocks of the food chain, struggle for resources, trade disruption, civil conflict, mass migration and human conflict. Food insecurity's connected consequences provoke instability, affecting directly the political sphere or society. The Arab Spring uprising was, for instance, preceded by a rise in food prices and 'bread riots' [32]. The risk and statistics consulting firm Maplecroft reports that sixty countries have an extreme or high risk of food insecurity [33], exposing the world to the socio-economic, geo-political and humanitarian risks [34]. Secondly, politics is entirely responsible of food crisis prevention and reaction, and it is crucial in the developing process of food crisis and in the condition of food insecurity as well. Sen [21] points out that no functioning multiparty democracy has ever suffered from famine, stressing the importance of information freedom, uncensored public opinion, representative democracy and party competition in reacting to food insecurity. He declares '*a free press and an active political opposition constitute the best early warning system a country threatened by famine can have*' [21], in opposition to the political

immunity of politics in authoritarian countries, often translated in a dogmatic perpetuation of damaging policies. Finally, politics can be the very cause of food insecurity of mass starvation. Edkins highlighted an aspect of famine neglected in Sen's work: political responsibility [35]. When food is available and individuals possess entitlement to benefit it, the access to food can be denied by force employed on the behalf of famine's beneficiaries or groups that possess food [35]. Denying people achievement of food security might be used as a political or military tool. Edkins argues that starvation is a political process, which implies decision making and responsibility, rather than simple rule following. In this view, food security issues, mass starvation in particular, should be regarded as crimes against humanity instead of a failure of technical and theoretical principles [35]. Analysing 1980s South-western Sudan mass starvation, Keen applied the approach usually used for crimes such as genocide, focusing on the famine perpetuators and beneficiaries, posing the questions '*what use is famine, what function does it assure, in what strategies is it integrated?*' [36]. 'Famines are not caused by abstractions – climate, food supply, entitlement failure, war – they are brought about through the acts or omission of people or group of people' [35], writes Edkins. Even limiting her extreme view, recognising that mass starvation can be the intentional work of determined actors, either by denying access to food or by avoiding any preventive or relief intervention, is fundamental in adjusting food security response. On these grounds, food security issues are entirely political issues. Having food insecurity political outcomes, political influence and political causes and responsibilities, it is impossible to treat the symptoms without addressing deep causes and foreseeable consequences. '*There is no such a thing as an apolitical food problem*', Sen wrote [8].

CONCLUSION

It can be understood from the above analysis that food security affects and is impacted by socio-political variables, and therefore it is not achievable by the sole means of science. A greater quantity of food does not guarantee a more equal distribution of resources. Increasing food production without altering its uneven distribution will only augment this inequality, making who has access to food more secure but not helping who is currently affected by the food insecurity issues. In the same way, food security is not affected by the quantity of food demand. The access of individuals to food is determined by social and economic entitlements: decreasing the number of people competing for food will not effect their ability or inability to correspond food to these entitlements. Lastly, food insecurity has political origins and repercussions, that science is unable to address. The disproportionate exploitation of resources is likely to provoke a major food security crisis. If not properly addressed, it could lead to a humanitarian disaster. For this reason, it is important to recognise the roots of food insecurity issues, and face them with joint effort and coordinated responses. Science can play its role, but development towards the solutions to food insecurity must be led by politics.

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REVIEW ARTICLE IN
INFECTIOUS DISEASES

Gender and HIV/AIDS in Bangladesh: A review

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Abstract

Introduction: The HIV/AIDS epidemic portrays a growing health threat in the world. In Bangladesh, the prevalence rate of HIV/AIDS is not yet high but it is gradually becoming a threat especially for women and young girls due to gender disparity. This systematic review was conducted to explore the gender-specific vulnerability to HIV/AIDS in Bangladesh in order to suggest to policy makers the best way for the prevention of HIV/AIDS in Bangladesh as well as in other low income countries.

Methods: Peer review articles were identified using a systematic search of two databases: Pubmed and Goggle Scholar. The search was limited to studies published in English between 1998 and 2016 and included a special focus on articles addressing the gender-specific risk factors to HIV/AIDS.

Discussion and Conclusion: This paper analyzes how women and girls in marginalized position in the society fall victim to HIV/AIDS due to gender disparities and other related issues. The findings of the study indicate that women and young girls are the most vulnerable to HIV/AIDS infection among the general people. Along with biological susceptibility, other major causes of this vulnerability of women and girls are gender inequality, sexual abuse and violence, social stigma, inability to decision making power, economic dependency and men's sexual power and privilege over women. This paper helps policy makers and invites them to take special care to reduce gender inequality before implementing any policy for the prevention of HIV/AIDS in Bangladesh as well as in low income countries.

KEY WORDS: HIV/; AIDS; social determinants of health; vulnerable populations; women's health; sex workers.

Riassunto

Introduzione: L'HIV rappresenta un pericolo crescente per la salute delle persone di tutto il mondo. In Bangladesh, il tasso di prevalenza dell'HIV e dell'AIDS non è ancora alto, ma sta crescendo gradualmente, rappresentando una minaccia specialmente per le donne e per le giovani donne a causa della disparità di genere. Questa revisione sistematica della letteratura è stata condotta con l'obiettivo di esplorare la vulnerabilità all'infezione da HIV/AIDS in Bangladesh determinata dalla disparità di genere, con la finalità di suggerire ai politici la via migliore per futuri programmi di prevenzione dell'HIV/AIDS in Bangladesh, cosi come in altri Paesi a basso reddito.
Metodi: Sono stati identificati gli articoli scientifici sottoposti a peer review attraverso una ricerca sistematica effettuata su due database: Pubmed e Goggle Scholar. La ricerca è stata circoscritta agli articoli pubblicati in inglese tra il 1998 ed il 2016 e si è concentrata in particolar modo sugli studi che affrontavano i fattori di rischio per l'HIV/AIDS dal punto di vista della differenza di genere.
Discussione e Conclusione: Questo studio ha analizzato come la disparità di genere e le altre problematiche correlate pongano le donne e le ragazze in una posizione marginale della società favorendo l'infezione da HIV. I risultati dello studio indicano che nella popolazione generale le donne e le giovani donne sono le più vulnerabili all'infezione da HIV. Insieme alla suscettibilità biologica, le altre maggiori cause di tale vulnerabilità sono rappresentate dalla disuguaglianza di genere, dall'abuso e dalla violenza sessuale, dallo stigma sociale, dallo scarso potere decisionale, dalla dipendenza economica, dal potere e dal privilegio sessuale dell'uomo sulla donna. Questo lavoro è di supporto per i politici e li invita a prestare molta attenzione al fine di ridurre la disuguaglianza di genere prima di implementare ogni politica per il miglioramento della prevenzione dell'HIV/AIDS, in Bangladesh cosi come in altri Paesi a basso reddito.

TAKE-HOME MESSAGE

Women and young girls are the most vulnerable to HIV/AIDS infection among the general people. It's urgent to reduce gender inequality before implementing any policy for the prevention of HIV/AIDS in Bangladesh as well as in other low income countries.

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INTRODUCTION

In the mid-1980s AIDS was recognized as a global health crisis [1]. According to WHO, since the beginning of the epidemic, more than 70 million people have been infected with the HIV virus and about 35 million people have died of HIV. Globally, about 36.7 million (34.0–39.8 million) people were living with HIV at the end of 2015 [2]. Certain population groups such as young people, women and girls are shown to be at higher risk of contracting HIV and/or of having to deal with the consequences of HIV and AIDS. Every year there are almost 380,000 (340,000 – 440,000) new HIV infections among adolescent girls and young women (aged 10–24 years) around the world [3]. The vast majority of people living with HIV are in low- and middle-income countries and Sub-Saharan Africa is the most affected region. The first reported case of HIV occurred in 1981, but the first case of HIV/AIDS in Bangladesh was detected in 1989. Although it is still considered to be a low prevalence country, Bangladesh remains extremely vulnerable to an HIV epidemic, given its poverty, overpopulation, gender inequality and high levels of transactional sex [4]. In Bangladesh, it is estimated that without any intervention the prevalence in the general population could be high as 2% in 2012 and 8% by 2025 [5]. Nowadays, among general population the prevalence rate of HIV is less than 0.1% [6]. While the overall prevalence for HIV is low in general population, it is high amongst injecting drug user (IVDUs) and currently stands at 7% (in Dhaka) [7]. According to a report of National AIDS Spending Assessment-Bangladesh (NASA), the number of people living with HIV/AIDS in Bangladesh is 8,000. Moreover, in 2012 among the new infected HIV cases 35% were women and among them 6% were children less than 15 years old [8]. Another study conducted by the World Bank and United Nations Joint Program on HIV/AIDS (UNAIDS) reported that Bangladesh, between 2001–2011, was one of the four countries in Asia where the incidence rate of HIV infection had been increasing (> 25%) among adults 15–49 years old [9]. People believe that Bangladesh is HIV risk-free for its religious lifestyle, because of the low prevalence rate of HIV/AIDS is this country, but that's wrong. Multiple risk factors make Bangladesh vulnerable to HIV/AIDS. Indeed, there is low knowledge on most important risk factors such as low use of condoms, keeping several sexual partners at the same time, frequent incidents of sexually transmitted diseases (STDs), weak blood transmission system and the presence of HIV in neighboring countries i.e. India, Nepal and Pakistan [10]. Moreover, in Bangladesh different residential hotels, seaports, tourist places, and slum areas are some key places of sex trafficking of women and girls [11]. Throughout the country approximately half a million men everyday meets with sex workers. Garments workers, truck drivers and rickshaw pullers are three risk groups who are frequently involved in illegal and unsafe sex [12]. Premarital and extramarital sexual relationships also exist in the society, but Bangladeshis people don't open their eyes. Moreover, because of globalization, in a similar way to some western countries, homosexuality and lesbian relationships are common phenomena in different urban part of Bangladesh, especially in Dhaka; these places are mostly prisons, student's hostel, bus stations, slums, labor colonies, barracks, and dormitories and so on [11]. Here, homosexuality is an important risk factor for HIV/AIDS because of the lack of mass awareness campaign in order to address HIV/AIDS. Sexually transmitted diseases (STDs) are another risk factor for spreading HIV/AIDS. In Bangladesh, sex workers (SWs), clients of sex workers, injecting drug users (IDUs), male sex with male (MSMs), truck drivers and rickshaw pullers are mostly responsible for this risk factor [13]. It is estimated that there are about 25,000 IDUs in Dhaka, Rajshahi, Sylhet and other urban areas in Bangladesh [11, 14]. Generally, STDs affect IDUs to a great extent because of the sharing the same needles while injecting drug into their body. In Bangladesh, IDUs have the highest prevalence rate of HIV/AIDS

(7%), according to the serological surveillance conducted in 2006. Apart from some special groups such as IDUs, MSMs, SWs, also Bangladeshis women from the general population are vulnerable to HIV/AIDS infection. Woman is four times more likely to contract HIV/AIDS than man [4], because male-dominated society always neglects women's right and social status. Women also deprived from proper education, employment opportunities, health care that contribute to decrease their decision making power in the society. Moreover, they are often subject to early marriage, sexual abuse and violence in the society. Women also face cultural and religious barrier in every sphere of their life, i.e. fail to negotiate their spouse/partners who may have unprotected sex and to be involved in unsafe sex may expose to HIV/AIDS infection. The aim of this review is to explore the gender-specific vulnerability to HIV/AIDS in Bangladesh in order to suggest to policy makers the best way for the prevention of HIV/AIDS in Bangladesh as well as in other low income countries.

MATERIALS AND METHODS

Peer review articles were identified using a systematic search of two databases: Pubmed and Goggle Scholar. The search was performed using the following key words: Bangladesh; women; HIV/AIDS; Sex Workers (SWs), Injecting Drug Users (IDUs), Male Sex with Male (MSMs), Commercial Sex Workers (CSWs). Clinical trials, reviews, meta-analyses, letters, editorials, and practice guidelines were all considered. The search was limited to studies published in English between 1998 and 2016 and included a special focus on articles addressing the gender-specific risk factors to HIV/AIDS. We read through the abstracts and selected relevant articles from 116 search results. A total of 49 articles on the Bangladeshi women's vulnerability to HIV/AIDS and their level of HIV knowledge were selected for full review. Moreover, recent estimates and data on the women's vulnerability in the world were obtained from websites of international agencies such as UNAIDS.

WOMEN AND HIV/AIDS AROUND THE WORLD

Since the start of the global HIV epidemic, in many regions, women have remained at a much higher risk of HIV infection than men. Young women and adolescent girls in particular, account for a disproportionate number of new HIV infections among young people living with HIV [15]. Worldwide, women constitute more than half of all people living with HIV. For women in their reproductive years (ages 15–49), HIV/AIDS is the leading cause of death [16]. In 2013, there were an estimated 380,000 new HIV infections among young women aged 15 to 24 accounting for 60% of all new HIV infections among young people. 80% of all young women living with HIV live in sub-Saharan Africa [3]. In 2014, almost 62% of all new HIV infections among adolescents occurred among adolescent girls. Moreover, HIV remains the leading cause of death among women of reproductive age, yet access to HIV testing and treatment remains low [15]. Women are more vulnerable to HIV biologically, epidemiologically, and socially. Biologically, semen contains a much higher concentration of HIV than does vaginal secretions and female reproductive anatomy makes a woman more highly susceptible to contracting sexually transmitted disease (STDs) in comparison to men. Epidemiologically, women are more vulnerable to HIV than men because they tend to have sex with, or marry, older men and men are more likely to have had more sexual partners than women. Socially, women are more vulnerable because they are expected to be more passive partner in sexual relationships. The degree of gender social roles (female submissiveness, expectations of male sexual activity/freedom and household position) vary according to cultural, racial, and religious heritage [17]. In the US, the proportion of AIDS diagnoses reported among women has more than tripled since 1985. The vast majority of women diagnosed with HIV (86%) contracted the virus through heterosexual sex and Black/African American and Hispanic/Latina women continue to be disproportionately affected by HIV, compared with women of other ra-

ces/ethnicities [18]. In developing countries, causes are gender inequality and intimate partner violence that prevents many women, particularly young women, from protecting themselves against HIV [3], lack of access to healthcare services because stigma and discrimination create additional barriers [19], lack of access to education [20, 21], lack of recognition under the law and legal restrictions [22]. In Sub-Saharan Africa (SSA), where women bear the brunt of the HIV epidemic [22], the disproportionate impact of the HIV epidemic on women can be attributable to several factors including those biological, social, behavioral, cultural, economic and structural [23]. AIDS is the leading cause of death among adolescents in Africa and the second leading cause of death among adolescents globally. Adolescent girls and young women are disproportionately affected by HIV in SSA, particularly in countries with high HIV prevalence. In SSA, 7 in 10 new infections in 15–19 year olds are among girls [24]. A systematic review of the intersection of intimate partner violence against women and HIV/AIDS indicated complex but real relationship between two epidemics threatening the health and safety of women in the US and around the world, particularly among low- and middle-income countries. Mechanisms by which the risk is increased were forced sex with an infected partner; limited or compromised negotiation of safer sex practices and the increased sexual risk-talking behaviors; moreover, the increase in other STDs that accompany abuse may facilitate HIV transmission [25]. According to UNAIDS [3], almost all of the countries of the world, the afflictions rate of HIV/AIDS are higher among women especially young women than men except some developed countries (see Table 1). The inherent causes of this affliction are so called "social construction of gender disparities" and "male-domination over female" in the world.

Table 1. Difference between young men and young women (aged 15–24 years) living with HIV in 2013 [3].

Regions and Countries	**Women**	**Men**	**Regions and Countries**	**Women**	**Men**
Sub-Saharan Africa			**Asia and the Pacific**		
Angola	1.2-1.8	0.6 -1.1	Bhutan	0.1- 0.5	≤ 0.1- 0.4
Benin	0.4 -0.5	0.2-0.3	Indonesia	0.5-0.9	0.4-0.9
Botswana	6.0-7.4	3.5-5.0	India	≤ 0.1 - 0.2	≤ 0.1 - 0.2
Cameroon	1.9-2.3	1.0 -1.5	Bangladesh	≤ 0.1 - ≤ 0.1	≤ 0.1- ≤ 0.1
Chad	0.9 -1.2	0.5-0.7	Myanmar	0.3 -0.3	0.2 - 0.4
Burkina Faso	0.5 - 0.6	0.4 - 0.5	Cambodia	0.2- 0.3	0.2 -0.2
Nigeria	1.3-1.6	0.7-1.0	Pakistan	≤ 0.1 - ≤ 0.1	≤ 0.1- 0.2
Rwanda	1.2- 1.4	0.9- 1.1	Thailand	0.3 - 0.4	0.3 - 0.6
Sierra Leone	0.6-1.0	0.3 - 0.5	Malaysia	≤ 0.1 - ≤ 0.1	0.2-0.2
Central African Republic	1.5-1.9	0.9-1.2	**Eastern Europe and Central Asia**		
Ethiopia	0.5-0.6	0.4-0.5	Georgia	≤ 0.1-0.1	0.3- 0.4
Congo	1.2 -1.5	0.7 - 0.9	Belarus	0.5- 0.6	0.3-0.4
Gabon	1.9- 2.6	0.4-0.7	Ukraine	0.4- 0.6	0.1 -0.2

Kenya	2.8 -3.4	1.7-2.3	Latin America		
Lesotho	10.5-12.8	5.8 -8.3	Belize	0.6 - 0.9	0.6 -1.0
Malawi	3.8-4.6	2.4 -3.3	Brazil	0.2 - 0.2	0.4 -0.6
Mozambique	6.1-7.4	2.7- 3.6	Guyana	0.9 - 1.8	0.6 -1.4
Namibia	4.8-6.7	2.7- 4.2	Paraguay	0.2 -0.5	0.3 - 0.8
South Africa	13.1- 16.1	4.0 - 5.9	El Salvador	0.3 -0.7	0.2 - 0.6
Swaziland	12.4 -14.8	7.2 - 10.2	Colombia	0.2 - 0.2	0.3 - 0.5
Zimbabwe	6.6 -7.9	4.1 - 5.6	**Western and Central Europe**		
Zambia	4.5 - 5.4	3.4 - 4.8	Estonia	0.5-0.8	0.8 -1.2
Caribbean and North America			UK	0.1 -0.2	0.2 -0.3
Bahamas	1.9 -2.4	1.4 -1.7	Spain	≤ 0.1 - ≤ 0.1	0.1- 0.2
Haiti	0.9 -1.1	0.6 -0.7	Italy	≤ 0.1 - ≤ 0.1	0.1-0.1
Trinidad and Tobago	0.9 -1.2	0.6 - 0.7	**Middle East**		
Jamaica	0.6 - 0.8	0.9 - 1.4	Sudan	0.2 - 0.3	0.1 -0.3
Nicaragua	≤ 0.1- 0.1	0.1- 0.3	Somalia	0.2- 0.4	0.2 - 0.3
Mexico	≤ 0.1- ≤ 0.1	0.1- 0.3	Yemen	≤ 0.1- ≤ 0.1	≤ 0.1- ≤ 0.1
Dominican Republic (the)	0.2- 0.3	0.2- 0.3	Iran(Islamic Republic of)	≤ 0.1- 0.2	0.1-0.3
Panama	0.3- 0.3	0.4- 0.6	Egypt	≤ 0.1- ≤ 0.1	≤ 0.1- ≤ 0.1
Cuba	0.1- 0.1	0.2- 0.3	**Global**	**0.4 - 0.5**	**0.3- 0.3**

WOMEN'S VULNERABILITY TO HIV/AIDS IN BANGLADESH

Alike the current global trend, women in Bangladesh envisage a greater risk of HIV/AIDS infection and mortality compared to men [26]. According to a report of UNICEF (2012) the prevalence rate of HIV infection among women was 2.7 against total prevalence of 3.1 per 10, 000 people. Along with physical susceptibility to the infection of HIV/AIDS, lack of socio-economic opportunity and gender inequality are liable for this higher rate of HIV/AIDS affliction among women in Bangladesh [27]. Moreover, gradual decline of religious morality, illiteracy and patriarchal domination over women create the great threat of severe vulnerability of HIV/AIDS to women. According to a research conducted on high-risk populations for HIV in Bangladesh, IDUs have the highest prevalence rate of HIV transmission, followed by female sex workers (FSWs), clients of sex workers, and men who have sex with men [28]. Our review shows that most surveys aimed to explore relationship between HIV/AIDS and commercial and female sex workers, FSWs and their clients are important sources of spreading HIV/AIDs in Bangladesh. In a survey carried out in Rajshahi City, more than 88% of FSWs reported practicing unprotected sex, because of clients' insistence [14]. In addition, majority of CSWs did not

use condom during sex with their clients [29]. In a recent study, 47% of the clients were suggests to use condom during last sexual intercourse and only 21% agreed to do so. Especially higher educated, unmarried, hotel-based and higher HIV knowledgeable FSWs convinced clients to use condom. However, FSWs had very little control over their profession [30]. In a survey of 2008, condom use was low among the female regular sex partners and primarily associated with women exhibiting risks practices. Moreover, a fourth of the participants have not heard about HIV/AIDS and only 17% have been tested for HIV [31]. Rukhsana et al. found that boatmen are at high risk of contracting HIV infection through sexual intercourses with CSWs and IDUs in Teknaf boarder area that connect Bangladesh and Myanmar, a country experiencing a generalized HIV epidemic. Therefore, there is a great potential for boatmen infected with the virus to spread HIV to their spouses and other sexual partners (both male and female) in their communities [32]. High-risk heterosexual contact, especially among commercial sex workers (CSWs), is a major mode of transmission. In a survey carried out in Daulatdia brothel, one of the largest river ports in Bangladesh, HIV/AIDS was viewed by most of 300 CSWs as a remote threat, over-riden by immediate economic and survival concerns. Only one-third of sex-acts on the last day of work were protected through condom use. CSWs who were married, had been a CSW for less than 5 years, were with a new client, or had two or more clients in last working day reported significantly higher condom use. Client dissatisfaction was the major reason for not using condoms [33]. In a survey conducted in Narayangonj, 20 Km from the capital Dhaka, only 18% of the respondents had heard about AIDS [34]. These findings are consistent with the high prevalence of STD's in Bangladesh because of high-risk sexual activity occurring outside marriage [35] and high level of premarital sexuality which is very common in Bangladesh, for males especially [36]. Bangladesh is one of the conduits of the 'Golden Triangle'; hence, heroin is quite easily available [37]. IDUs in Bangladesh are most vulnerable groups to the infection and spread of HIV/AIDS among general people due to lack of awareness and knowledge about HIV/AIDS and practice of risk behaviors i.e. high level of needles/syringes sharing, and unprotected sex [13]. Female IDUs in Bangladesh are at risk of major HIV epidemic from both injection sharing and sexual risk behaviors and sex worker IDUs appear especially vulnerable once HIV enter this community. The female IDUs are likely to bridge the epidemic to the general population [38]. Understanding substance-use-related concerns among women is important for effective HIV prevention. A review has identified four main themes: (a) opioid use and injecting drug use in women, (b) alcohol use in sex work settings, (c) sexual transmission of HIV from male-injecting drug users (IDUs) to their regular female sex partners, and (d) sexual violence among female partners of substance-using men [39]. In a study investigating the most important risk factors for HIV/AIDS in Bangladesh, poverty and bias against women i.e. exclusion from social, economic and legal rights heighten the vulnerability of this group of people in Bangladesh [10]. Moreover, ignorance, illiteracy, superstition, poverty, rape violence, unemployment, high prevalence of HIV infection in the neighboring countries cause the infections of HIV. The incidence of vulnerable sex workers among the women of Bangladesh and female emigrants returning from abroad or departing immigrants are important factors in increasing the risk of HIV/AIDS at an alarming rate [40]. In a survey of Martin et al., male patients who were HIV positive over 70% were returning to migrants workers from oversee especially Middle East countries. The proportions of men who reported sex with female sex workers were 51% [41]. The sexual risk behavior of married men living away from home may put themselves and their wives at risk for HIV infection. A cross-sectional survey was performed on random samples of 1,175 married women and 703 married men in 2 rural

areas of Bangladesh; extramarital sex was reported by 64.2% of 296 men and 8.6% women who had lived apart from their spouse [42]. A study based upon returning migrant workers and spouses revealed that the majority of those who tested positive were aged 25–44 (71%), male (70%), and married (68%) [43]. Moreover, lack of public awareness of HIV/AIDS, misconceptions about diseases, high risk behaviors are liable for the infection of HIV/AIDS and Bangladesh's proximity of India and Myanmar (high endemic of HIV regions) also increase fear of spreading HIV widely [35]. According to a recent survey, FSWs and female prisoners experience elevated HIV prevalence compared to the general population because of unprotected sex and unsafe drug use practice. Female prisoners are much more likely to have a drug problem compared with male prisoners and have higher HIV prevalence, yet are less likely to have access to HIV preventions and treatment in prison [44]. Several studies have highlighted the limited knowledge about HIV/AIDS that may also contribute to the spread of the HIV virus in Bangladesh. This low level of public knowledge is likely due, in part, to the fact that there has been little information on AIDS and STDs presented in the mass media [35]. Low level of awareness and knowledge about HIV/AIDS was found among rural married women in Bangladesh [45]. In a survey, HIV knowledge among the potential female migrant worker seemed to be poor and television and health workers were the major sources of HIV related knowledge [46]. In a study on male and female garment workers, Hasan et al. found that most of the garment workers (76.9%) had poor awareness about HIV/AIDs. Only 10% had good knowledge. Men compared to women and literate workers were much aware about HIV/AIDS. Moreover, 10-14 age groups were much vulnerable than other [12]. According to Gani's research, urban adolescents had twice the knowledge of HIV/AIDS to rural adolescents. Moreover, the knowledge of STDs and HIV/AIDS transmission was lowest in 12 to 14 years old. Finally, uneducated female households' workers were the poorest socioeconomic status in rural settings [47]. In a survey of female adolescents only one in six adolescents had ever heard of AIDS [48]. In a study conducted in 2011 on 12,512 women ageing between 15 and 49, level of HIV knowledge among Bangladeshi women was quite low [49]. According to Gibney [35], for most Bangladeshis, condoms are known as a means of contraception but are not widely used. Hossain et al. found that correct knowledge of transmission and symptom of HIV among CSWs was poor. HIV/AIDS was viewed as a remote threat, overridden by immediate economic and survival concerns, although majority of SWs knew that condom protect the infection of HIV/STDs, only one third of sex acts on the last day of work were protected through condom use [50]. In a survey of 524 male married respondents, 26% had no knowledge about HIV/AIDS. Only 29% mentioned that condom might be a preventive measure against AIDS [51]. Moreover, condom use was low among the female regular sex partners of male drug users [52]. Finally, a study focused on men who have sex with men's sexual relations with women [53]. In conclusion, according to the Mahmood's review, importance should be given on safe sex, counseling and advocacy for the prevention of HIV/AIDS [54].

GENDER-RELATED RISK FACTORS FOR HIV INFECTION IN BANGLADESH

Some important gender differences in the risk of HIV infection have been outlined below.

Biological susceptibility

Women are biologically more vulnerable to infection of HIV/AIDS than men. During unprotected sex, woman may be prone to greater risk of HIV infection than man [55], because the female genital tract has a greater exposed surface area than the male genital tract, and women are exposed to infectious fluids for longer periods of time during sexual intercourse than men, and they also face increased risk of tissue injury during sex intercourse. Moreover, HIV targets CD4 cells. A

large number of CD4 cells are found in the cervix because it acts as a barrier to protect a potential fetus. For this reason, it is easier for the HIV virus to find the cells it will infect inside a woman, compared to a man. Additionally, women are also more likely than men to harbor untreated STDs or to have bacterial vaginosis, both of which enhance the probability of HIV acquisition. Finally, semen generally has higher viral load than vaginal fluids [56, 57].

Multiple partnership

Heterosexual intercourse is the primary mode of HIV infection worldwide [58]. Multiple partnerships seem to be widely prevalent among adolescents and young adults of both sexes throughout the world, with the exception of conservative (usually religious) groups. Moreover, in many cultures there is tolerance for multiple sexual partnerships, including extra-marital sex by men. Consistent use of condoms during a sexual intercourse provides protection from HIV [58]. However, much of the resistance to condom use encountered by condom promotion program is gender-related [59]. Specifically, men often force their partner to engage in sexual intercourse without using condoms and the most common reason given by there is that condoms reduce pleasure. Moreover, condom can be considered the outcome of a negotiation between potentially unequal partners. Indeed, gender-based power inequalities incorporate the belief that men should control women's sexuality and childbearing capacity [60]. A number of studies report that woman is often disinclined to use condom for fear of being seen as promiscuous or victim of violence/harassed by her partner during sexual act [59]. Therefore, in a relationship of unequal power, it's difficult for a woman to be able to negotiate effectively the use of condoms [60].

Sexual violence

Sexual violence occurs throughout the world. At the heart of sexual violence directed against women is gender inequality. In many countries, data on most aspects of sexual violence are lacking. However, available data show that in some countries nearly one in four women may experience sexual violence by an intimate partner, and up to one-third of adolescent girls report their first sexual experience as being forced [61]. Additionally, there is strong evidence regarding the relationship between Intimate Partner Violence (IPV) and HIV. In areas with a high HIV prevalence, women who are exposed to IPV are 50% more likely to acquire HIV compared to those who are not [62]. Across the world, adolescent girls and young women face the highest levels of IPV. According to the UN Children's Fund (UNICEF), 120 million girls globally are raped or sexually abused by the age of 20 [63]. Violence against wives is common among Bangladeshi men. Men who perpetrate such abuse represent increased risk regarding their wives' sexual health because they are more likely to both participate in extramarital sexual behavior and contract an STD compared with non-abusive husbands [64]. Violent or forced sex can increase the risk of transmitting HIV, because in forced vaginal penetration, abrasions and cuts commonly occur, thus facilitating the entry of the virus through the vaginal mucosa. Furthermore, adolescent girls are particularly susceptible to HIV infection, because their vaginal mucous membrane has not yet provided an effective barrier. In a similar way, those who suffer anal rape are also very susceptible to HIV since anal tissues can be easily damaged, again allowing the virus an easier entry into the body. People who experience forced sex in intimate relationships often find it difficult to negotiate condom use, either because using a condom could be interpreted as mistrust of their partner or as an admission of promiscuity, or else because they fear experiencing violence from their partner. Finally, forced sex in childhood or adolescence increases the likelihood of engaging in unprotected sex, having multiple partners, participating in sex work, and substance abuse [62, 63].

Commercial sex

Commercial sex can be considered as one of the most important risk for HIV/AIDS spreading. UNAIDS defined sex workers as

'Female, male and transgender adults and young people who receive money or goods in exchange for sexual services, either regularly or occasionally' [65]. Sex workers often share common risk factors; they have no access to condoms, or are not aware of their importance; then, especially in cases of young sex workers, they are simply powerless to negotiate safer sex. In some countries sex workers also inject drugs. Moreover, sex workers are often stigmatized, marginalized and criminalized by the society in which they live. The lack of protection leads to abuse, violence and rape, creating an environment which can facilitate HIV transmission [66]. Also in Bangladesh, there are cases of sex workers, especially young female, being physically and sexually abused by clients and the police [50]. Bangladesh has several well-documented at-risk groups, the most prominent of which is brothel-based sex workers [67]. Indeed, in Bangladesh prostitution is legal, but there are various provisions of different laws prohibiting child prostitution and forced prostitution. The UNICEF estimated in 2004 that there were 10,000 underage girls used in commercial sex exploitation in our country, but other estimates placed the figure as high as 29,000. It is recognized that low status of women, economic discrimination, lack of economic opportunities play critical role in Bangladesh, like in all developing countries of South-East Asia, South-Asia, and Africa [50].

Gender norms

In Bangladesh, religion and cultural tradition act at the same time on institutions of male dominance to determinate specific forms of masculinities and gender regimes, which produce men's gender-based violence against women in different ways. The sense of masculine responsibilities creates sexual double standards and undermines sexual rights and equality of women in relationships [6]. Norms of masculinity (including homophobia) can encourage high risk sexual behavior by men and make their partners more vulnerable [68]. Norms of femininity may discourage women from asserting control over the timing and circumstances of sex, including negotiating protection against HIV and other sexually transmitted infections. For women these patriarchal systems have negative consequences, such as restriction on mobility, fewer educational and employment opportunities, and low representation or participation in power structures [58, 60]. Lack of education, social norms and positioning, and economic insecurity limits decision-making power, mobility and access to information and services [68].

Early marriage

In Bangladesh, like in many parts of the world, it is common for young girls to marry before they are 18 years old. Most often, they marry older, sexually experienced men who may already be infected with HIV and transmit it to their young wives. Therefore, girls married before the age of 18 face significant risks of HIV. Crossing the threshold into marriage greatly intensifies sexual exposure via unprotected sex, which is often with an older partner who, by virtue of his age, has an elevated risk of being HIV-positive. For this reason, several studies on countries of Sub-Saharan Africa indicated that adolescent girls bear the greatest burden of HIV infections [59].

Malnutrition

Malnutrition can accelerate the progress of HIV infection to AIDS and HIV/AIDS leads to malnutrition, because of biological and social factors that affect the individual's ability to consume, use, and acquire food [69]. Rates of malnutrition in Bangladesh remain among the highest in the world, with an estimated six million children chronically undernourished [70]. Women are often victims of unequal distribution of foods, especially if their family is poor and illiterate [69]. Malnutrition undermines women's productivity, makes them more susceptible to infections, and leaves them with fewer reserves to recover from illness.

Stigma and Health seeking behavior

HIV-related stigma and discrimination refers to prejudice, negative attitudes and abuse directed at people living with HIV and AIDS. In 35% of countries with available data, over

50% of men and women report having discriminatory attitudes towards people living with HIV [71]. Men and women living with HIV/AIDS experience discrimination and stigma differently. Indeed, norms of masculinity can discourage men's use of HIV testing and other health services. Norms of femininity can prevent women (especially young women) from accessing HIV information and services [72]. This gender difference of stigma affects women more severely than men [44]. An UNAIDS study conducted across seven countries (Cambodia, Cameroon, Chile, Costa Rica, Papua New Guinea, The Philippines, and Zimbabwe) found that men with HIV were hardly questioned about how they became infected. On the contrary, women were often accused of having had extra marital sex (whether or not it was true) and received lower level of support [59]. Moreover, self-stigma is a barrier to seek help and access services when needed [68]. Stigma and discrimination against women living with HIV are severe. Married women, who have contracted HIV from having unprotected sex with their husbands, are often scorned, mistreated and even evicted from their in-laws home when their HIV status becomes known [68, 73]. Health seeking behavior is influenced by gender and, stigma and discrimination [68]. Socio-cultural norms that define male and female roles and responsibilities also affect women's and men's access to and use of health services, including HIV/AIDS services [59]. Therefore, HIV-related stigma can be a major barrier to the access of women living with HIV to services not only for HIV, but other areas of health. In particular, HIV-related stigma can influence a woman's decisions about her reproductive choices and prevention of mother-to-child transmission.

Economic disempowerment

There is a multitude of socio-economic factors that increase vulnerability of women to HIV. The subordinate positions of women in the society make them vulnerable in terms of economic dependency, lack of assets and lack of protection against abuse and exploitation. Women are also subjected to discrimination right from their childhoods in terms of denied access to education and gainful employment. In urban setting, cohabitation and temporary sexual relationships are gradually increasing because women need bear the cost of their family i.e. house rent, food, education etc. Pressure to provide income for themselves or their families leads some women to engage in 'transactional sex' with men who give them money or gifts in exchange for sex and, very often, women who are not economically independent cannot insist on condom use.

Migration

In Bangladesh, a large part of the gross domestic product comes from remittances. However, migration can place people in situations of heightened vulnerability to HIV and has been identified in certain regions like Bangladesh as an independent risk factor for HIV. Indeed, infected returning workers can contribute to spread HIV infection among women by sexual intercourse [32]. There is no official data on overseas migrants living with HIV and further research should be conducted regarding informal international migrant workers [8]. According a recent UNAIDS' report (2014), workers in the transportation sector, particularly long-distance truck drivers, have been identified as associated with an increased risk of acquiring HIV [74]. In Bangladesh, migrant workers account for a significant number of people living with HIV because they have to face conditions in their host country that make them vulnerable to acquiring HIV. For example, female migrants in transit may be forced to engage in transactional and unprotected sex to facilitate their border crossing. Moreover, sexual harassment, abuse and rape are experiences commonly reported by female migrants [57].

Table 2. Women-related risk factors for HIV.

	Risk factors	How the risk factors work
1	Biological susceptibility	The surface area of the female genital tract, and the exposition to infectious fluids for longer periods during sex intercourse make women more vulnerable to HIV infection. HIV targets CD4 cells which are found in the cervix, and untreated STDs, and bacterial vaginosis can enhance the probability of HIV acquisition. Adolescent girls are very susceptible to HIV infection, because their vaginal mucous membrane has not yet well developed.
2	Multiple partnership	Multiple partnerships are prevalent among adolescents and young adults. Moreover, in many cultures there is tolerance for multiple sexual partnerships, including extra-marital sex by men. Much of the resistance to condom use is gender-related.
3	Sexual violence and 'Intimate sexual violence'	Violent or forced sex can increase the risk of HIV infection, because in forced vaginal penetration, abrasions and cuts commonly occur, faciliting the entry of the virus through the vaginal mucosa. Moreover, men force their partner to engage in sexual intercourse without using condoms.
4	Commercial sex	Sex workers are often stigmatized, marginalized and criminalized by the society. This leads to abuse, violence and rape by clients and police. Sex workers are powerless to negotiate safer sex by using condoms.
5	Gender norms	Lack of education, low positioning in power structures, social norms, and gainful employment limits decision-making power, mobility and access to information and services.
6	Early marriage	Young girls are very often married with older men who may already be infected with HIV.
7	Malnutrition	Women are victim of unequal distribution of foods. Malnutrition can accelerate the progress of HIV and make women more susceptible to infections.
8	Stigma and health seeking behavior	Stigma affects women more severely than men. Stigma, self-stigma and discrimination are barriers to seek help and access services when needed.
9	Economic disempowerment	The subordinate positions of women in the society make them vulnerable in terms of economic dependency.
10	Migration	Migrant workers have to face conditions in their host country that make them vulnerable to acquiring HIV. Especially female migrants in transit may be forced to engage in transactional and unprotected sex to facilitate their border crossing. Moreover, sexual harassment, abuse and rape are common experiences.

POLICY IMPLICATIONS FOR THE PREVENTION

Recently, the Ministry of Health & Family Welfare of Bangladesh has developed the 3rd National Strategic Plan (2011–2015) based on the synthesis of evidence and a thorough assessment with wide range of consultations with government departments, civil society, public and private sector partners, Non-Governmental Organizations (NGOs), and community based organizations. Based on this Plan, the Government is continuing to provide care, support and treatment to all most at risk groups of the population (IDUs, female and male sex workers and clients, ma-

les who have sex with males and Hijra) along with focused prevention services for the vulnerable populations. However, in Bangladesh and in many developing countries, HIV disproportionately affects women and adolescent girls because of their unequal cultural, social, and economic status in society [8]. Gender inequality, intimate partner violence, and harmful traditional practices reinforce unequal power dynamics between men and women. This limits women's choices, opportunities and access to information, health and social services, education and employment [75]. Moreover, gender inequality affects HIV prevention, detection, and management. It's urgent to include programmes in order to address gender inequality and gender-based violence as both causes and consequences of HIV infection. These programmes should address women's and girls' inequality in sexual and reproductive decision-making; gender barriers to health services; discrimination in inheritance, property-holding, marriage, divorce and custody; sexual and other violence; lack of equal access to educational and economic opportunity; and lack of support to care-givers in HIV-affected households. Finally, such programmes should be complemented by programmes targeting men and boys which address harmful gender norms that make women and girls, as well as men and boys, vulnerable to HIV infection. As the third National Strategic Plan has highlighted, condom accessibility needs to be improved to prevent transmission of the HIV and other sexually transmitted diseases. According to finding of this review, promoting a later marriage, to at least age 18, and shoring up the protection options including condoms should be an additional preventive measure for HIV infection. However, promotion of both condom use and gender equality faces different socio-cultural barriers and needs context sensitive interventions.

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CLINICAL TRIAL IN PSYCHOLOGY OF SPORT

Examining physical training versus physical and mental training programmes in Swimrun semi-professional athletes: A randomised, controlled, trial

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Abstract

Objective: The purpose of this study was to identify the effect of two psychological interventions, named 'Mental imagery' and 'Motivational self-talk' training used in combination, on perceived excertion and flow state in a sample of Swimrun semi-professional athletes.

Methods: Thirty male semi-professional athletes, enrolled for a Swimrun competition, were randomly selected into an experimental group (EXP) and a control group (CON). The modified Borg Scale of Perceived Exertion (RPE) and the Flow State Scale (FSS) were the dependent variables. Before a Swimrun competition, the EXP Group performed both physical and mental training programs, while the CON group only performed a physical training program. Immediately after the race, we measured the dependent variables in both groups.

Results: The results of unpaired-t test showed that levels of perceived exertion were less in EXP group than CON group, ($t(28) = 12.87$, $P < .001$), while levels of flow state were higher in EXP group than CON group ($t(28) = 5.96$, $P < .001$), immediately after the end of the endurance competition. The use of both mental imagery and self-talk training in order to reduce perceived exertion and improve flow state was supported ($P < .001$).

Discussion and Conclusion: The findings of this study support the psychobiological model of endurance performance. Our research is the first to demonstrate that mental imagery used in combination with motivational self-talk can reduce the perceived exertion and improve the flow state in Swimrun athletes during their endurance performance.

KEY WORDS: psychology, sports; physical exertion; psychotherapy; physical endurance; athletes.

Riassunto

Introduzione: L'obiettivo di questa ricerca è stato quello di studiare l'effetto di due tecniche psicologiche usate in combinazione, la "Mental Imagery" e la "Motivational Self-Talk", sulla percezione dello sforzo e sul "Flow state" di un campione di atleti sportivi semiprofessionisti di "Swimrun".
Metodi: Un gruppo di trenta atleti semiprofessionisti iscritti ad una gara di Swimrun è stato randomizzato in un gruppo sperimentale (EXP) ed in un gruppo di controllo (CON). Sono state utilizzate come variabili dipendenti una versione modificata del questionario di Borg per la misura dello sforzo percepito ("Borg Scale of Perceived Exertion") ed una versione modificata del questionario per la misura del Flow State ("Flow State Scale"). Prima della gara il gruppo EXP ha effettuato un programma di allenamento fisico e di training mentale con le due tecniche psicologiche "Mental Imagery" e "Motivational Self-Talk", mentre il gruppo di controllo ha effettuato soltanto il programma di allenamento fisico. Immediatamente dopo la gara di endurance, sono state misurate le variabili dipendenti in entrambi i gruppi.
Risultati: I risultati del t-test di Student per dati non appaiati ha evidenziato che, immediatamente dopo la gara, i livelli di sforzo percepito erano minori nel gruppo EXP rispetto al gruppo CON ($t(28) = 12.87$, $P < .001$), mentre i livelli di "Flow State" erano maggiori nel gruppo EXP rispetto al gruppo CON ($t(28) = 5.96$, $P < .001$). E' stato confermato che l'uso combinato delle tecniche di "Mental Imagery" e di " Motivational Self-Talk" è efficace nel ridurre lo sforzo percepito e nell'aumentare il Flow State degli atleti di Swimrun ($P < .001$).
Discussione e Conclusione: I risultati supportano la validità del modello psicobiologico nelle gare di endurance. Il nostro studio è il primo a dimostrare l'efficacia della "Mental Imagery" e della "Motivational Self-talk" usate in combinazione sulla riduzione dello sforzo percepito e sull'aumento dei livelli di "Flow State" negli atleti di Swimrun impegnati in gare di endurance.

TAKE-HOME MESSAGE

Motivational self-talk used in combination with mental imagery can reduce perceived exertion and, simultaneously, increase flow state levels in semi-professional Swimrun athletes.

Competing interests - none declared.

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INTRODUCTION

Sport psychology is a proficiency that uses psychological knowledge and skills to address optimal performance and well-being of athletes. Some of the principal strategies include cognitive and behavioral skills training for performance enhancement, counseling and clinical interventions and consultation and training [1–3].

Recently, Mc Cormick et al. systematically reviewed all psychological determinants of whole-body endurance performance [4]. Consistent with the psychobiological model of endurance performance, interventions that influences perception of effort consistently affected endurance performance. The psychobiological model is an effort-based decision-making model [5–9] based on motivational intensity theory [10] and postulates that the conscious regulation of pace is determined primarily by five different cognitive/motivational factors: 1) perception of effort; 2) potential motivation; 3) knowledge of the distance/time to cover; 4) knowledge of the distance/time remaining; 5) previous experience/memory of perception of effort during exercise of varying intensity and duration [11]. Perception of effort could be defined as 'the conscious sensation of how hard, heavy and strenuous a physical task is' [9], and it is the key determinant of this model [11]. According to this model, the conscious regulation of pace is primarily determined by the effort perceived by the athlete [11]. According to the psychobiological model, the ultimate determinant of endurance performance in highly motivated subjects is perception of effort which can be defined as the conscious sensation of how hard, heavy and strenuous exercise is [6–9, 12]. According to the Mc Cormick's review, among different, practical, psychological interventions identified, consistent support was found for using imagery, self-talk and goal-setting to improve endurance performance, even though it is unclear whether learning multiple psychological skills is more beneficial than learning one psychological skill [4]. A recent study was the first able to experimentally demonstrate that 'motivational self-talk' reduces perception of effort, and provides empirical support for previous suggestions that self-talk enhances endurance performance increasing time to exhaustion during high-intensity cycling exercise [13]. According to Mc Cormick's review, psychological skills training could benefit and endurance athlete in many sports such as running, rowing, skiing, canoeing, kayaking, swimming, speed skating, triathlon and race walking [4]. As to our best knowledge, there are no experimental studies about the effects of psychological interventions in Swimrun which is a very tough endurance competition. A Swimrun is a multiple-stage competition involving where participants are running and swimming over a cross-country race-course that involves many transitions between the swim- and run stages of the race. In 2015, the world's first Ultraswimrun, the Stockholm Archipelago Ultra Challenge (SAUC) took place, and it is now considered the toughest available Swimrun race in the world, stretching over some 250 km. The international focus has been growing in the last years, and in 2016 there were more than 180 known races in the world, in 19 countries and on 4 continents [14]. The aim of this randomized, clinical, trial was to study the effects of both motivational self-talk and mental imagery used in combination in order to reduce perceived exertion and improve flow state of the Swimrun athletes during an endurance competition performance.

METHODS

Participants

Twenty-two healthy male (32 ± 4.3 years, 1.74 ± 0.06 m and 72.5 ± 8.4 Kg) trained (2 to 6 years) Swimrun semi-professional athletes were recruited directly by the researchers of the Italian Society of Integrative Psychotherapy for Social Development (SIPISS) Research Center among the competitors of an Italian Swimrun competition. All

partecipants had at least one year experience in resistance training and were non-smokers, non diabetic, and free of cardiovascular, lung, liver disease, and any other diseases. To be eligible to participate in the study, partecipants were required to meet the following criteria: 1) none of the partecipants had performed mental training with the aim of improving sport performance; 2) no consumption of any supplements or drugs; 3) non recent major injury history for the lower and upper-body; 4) no history of psychiatric disorders; 5) no severe cognitive impairment; 6) subjected to a test on mental imagery [Sport Imagery Ability Measure (SIAM)] [15], having a moderate mental imagery ability. The partecipants were randomly assigned to two groups, an experimental, physical and mental training group (EXP; n = 11) and a control, physical training group (CON; n = 11). Mental training was administered via a mental training package (MTP; subsequently described). The study was conducted according to the Declaration of Helsinki. Written and verbal informed consent was obtained from each participant following verbal description all experimental details, with this obtained priority to any experimental data collection.

Study Procedure

Sixteen training sessions occurred over 8 consecutive weeks, with a maximum of two training sessions per week, and a minimum of one day rest between training sessions.

Training program

Physical training protocol

Partecipants of both experimental and control groups completed sixteen 60-min laboratory-based treadmill exercise sessions (two sessions were completed each week). Partecipants started at a heart rate of 40% to 50% of maximal heart rate reserve determined by use of the Karvonen formula [16]. The intensity of the exercise was increased by 5 minutes to reach 15 minutes at 70% to 80% of heart rate reserve. Moreover, participants performed resistance (muscle strengthening) exercises of the lower body followed by stretching of the upper and lower body. Resistance exercises included 2 sets of 10 repetitions on each leg on 3 resistance machines: the leg press, leg extension, and leg curl. Weight was increased as tolerated. Stretching exercises comprised 1 set of 10 repetitions each of trunk rotation, hip abduction, and stretches of hamstrings, quadriceps, calves, and ankles performed on padded tables under supervision of an exercise physiologist.

Mental training protocol

The partecipants received two ~ 60 min training sessions a week for two months before the competition, delivered by the same certified sport psychologist for all partecipants. The MTP required the combination of motivational self-talk (*M*-ST) and mental imagery (MI). It is well known that mental skills such as self-talk and mental imagery are highly related to successful accomplishment of tasks [17] and a combination of MI and *M*-ST induce better information-processing models in the performance domain, than their singular discrete implementation [18, 19].

Mental Imagery training

Imagery is also called "visualization" or "mental rehearsal". In sports, the subject of imagery is traditionally related to movement, so called 'motor imagery' [20]. The main aim of motor imagery is to enhance specific motor actions [21]. Motor imagery is a cognitive strategy used by athletes for learning and optimizing their specific movement tasks [22]. In sport imagery research there are five types of imagery; these are cognitive specific (CS; imagery of skills), cognitive general (CG; imagery of strategies, routines, and game plans), motivational specific (MS; imagery of goal achievement), motivational general-arousal (MG-A; imagery of stress, anxiety, and arousal), and motivational general-mastery (MG-*M*; imagery of being self-confident, mentally tough, focused, and positive) [23]. In our study we used a guided mental imagery combining a picture of the final goal—winning the Swimrun tournament— with one of the process by which that goal is achieved—mental-

ly practicing the race needed to perfect the Swimrun race. In the present study, we applied the following types of mental imagery interventions: MS, MG-A and MG-*M*. The flow mental imagery recording was based upon the nine major tenets of flow [24] and it was twenty minutes in length.

Motivational Self-Talk training

Self-talk refers to verbalization or a statement addressed to the self before, during and after the imagined and actual trials actions. The partecipants of the experimental group were asked to identify and write negative self-talk statements that occurred before, during and after the training sessions and to change them into positive and motivational statements [19]. Indeed, motivational self-talk is composed of positive phrases that encourage you to keep on track and work through challenges. For example: 'I can swim intensively', 'I can run strenuously'.

Control group

Control partecipants engaged in physical training, instead experimental partecipants engaged in physical and mental training programs.

Setting

The setting of the physical and mental training programmes was the SIPISS Psychological Research Center, at Milan (Italy). The Borg's scale was administered immediately after the end of an Italian Swimrun competition named the 'Swimrun cheers'. This endurance race occurred on August 2016, 27th in Maggiore Lake (Piedmont, Italy). It was a multiple-stage competition in which participants ran and swam without transition zone for 39 kilometers (Km);12 Km by swimming and 27 Km by running.

Outcome measures

The perceived exertion

The study of effort perception has long been dominated by the work of Gunnar Borg. During the 1960's Borg introduced the concept of 'perceived exertion' as a subjective perception of the effort during physical work, and developed a scale to measure this concept, known as the Rating of Perceived Exertion (RPE) scale. Borg's RPE scale was widely endorsed and used for monitoring training load in order to avoid overreaching and overtraining phenomena [25, 26]. The guidelines of the American Heart Association (AHA), for example, recommend monitoring cardiovascular responses to resistance exercise, including the heart rate (HR), blood pressure (bp), and perceived exertion, and using the RPE scale to set the intensity of strength training in both young and older adults [27].

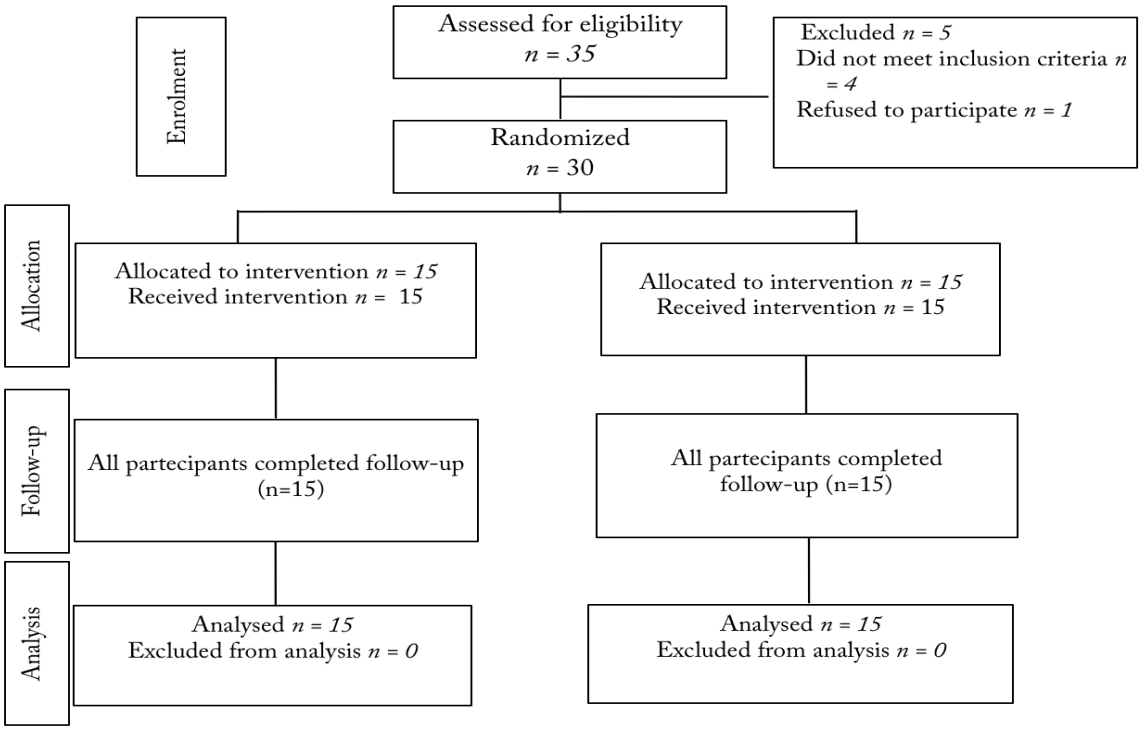
The Borg's RPE Scale is a method for measuring 'overall' perceived exertion, effort and fatigue in physical work. Ratings of Perceived Exertion or RPE is determined in training of athletes and recreational sports, and in epidemiological evaluations of exercise intensity and daily physical activities. Currently, there are three versions of scale: the original scale (RPE scale) that rated exertion on a scale of 6-20, the Category Ratio version (Borg CR-10 Scale) with the ratings between 0 to 10 [28–31], and the Borg CR-100 Scale (also called 'centiMax scale'), the third and more fine-graded one that was introduced by Elisabeth Borg [31–33, 34]. In the present study we used the Borg CR100 scale. This scale varies from 0 to 100 (see Fig. 1) with the verbal descriptors placed where they belong on a ratio scale, i.e., so as to give ratio data comparable to what is obtained with traditional psychophysical methods such as magnitude estimation [35, 36]. Thus, 0 is described as 'nothing at all' (i.e., no subjective or perceived force), and 100 is described as "maximum" (i.e., maximal subjective or perceived force) and anchored in a previous experience of a maximal perceived exertion. In between these points, there are other descriptors such as "minimal", extremely weak, very weak, weak, moderate, somewhat strong, strong, very "strong", and extremely strong [33, 37, 38].

The flow theory

In the sporting context, the athletes will experience flow when goals are clearly set by the

athlete, feedback is immediate and unambiguous [39]. The Flow Scales are used to assess flow, and they have been developed and validated by Jackson and Marsh [40]. Extent of flow experienced in a particular event or activity (e.g., a race, a work project, or a test) is measured by the State Flow Scales. The flow state, a positive experiential state, occurs when the performer is totally connected to the performance, in a situation where personal skills equal required challenges. It is a state aspired to by elite athletes, but also one that can be enjoyed by any level of sport participant [41- 43]. The Flow State Scale was used in the present study. It is a 36 item self-report scale that measures the intensity with which an athlete experiences flow. The nine FSS scales of this 36-item instrument represent the dimensions of flow discussed by Csikszentmihalyi [24] and each scale is measured by four items. Jackson and Marsh (1996) reported the development of a Flow State Scale (FSS) for use in sport and physical activity. Jackson and Marsh reported high internal consistency estimates for the subscales and evidence for nine first-order factors and one second-order factor when confirmatory factor analytic techniques were used [40]. The FSS includes 36 items with a five-point Likert scale (ranging from 1 – total disagreement to 5 – total agreement). This 36-item instrument has nine subscales of four items each, labelled challenge-skill balance (e.g., 'I was challenged, but I believed my skills would allow me to meet the challenge'), action-awareness merging (e.g., 'I made the correct movements without thinking about trying to do so'), clear goals (e.g., 'I knew clearly what I wanted to do'), unambiguous feedback (e.g., 'It was really clear to me that I was doing well'), concentration on task at hand (e.g., 'My attention was focused entirely on what I was doing'), sense of control (e.g., 'I felt in total control of what I was doing'), loss of self-consciousness (e.g., 'I was not concerned with what others may have been thinking of me'), transformation of time (e.g., 'It felt like time stopped while I was performing'), and autotelic experience (e.g., 'I found the experience extremely rewarding'). Scores of each subscale are added to obtain a total Flow score. The total score of each subscale ranges from 4 to 20, while the overall score ranges from 36 to 180. The Italian version of the Flow State Scale was te-

Figure 1. CONSORT flow diagram of the study. The final number of participants analysed is based on the principle of complete case analysis and intention-to-treat principle.



sted by Diana et al. [44] on a sample of 136 Italian athletes. The results showed good reliability of the overall instrument (α = 0.88) and of its subscales (minimum α = 0.75), with the exception of the 'SB' scale. Moreover, the Italian version of the Flow State Scale was recently tested by Morganti et al. [45].

Statistical analysis

We used Statistical Package for the Social Sciences (SPSS)-version 16.0 to perform statistical analyses. An independent T-test was used to determine whether there was a statistically significant difference in perceived exertion and flow state scores between the two independent groups (i.e., the 'Experimental group' and 'Control group'). All statistical tests were considered significant as p value lower than 0.05.

RESULTS

In order to assess success of matching exercise intensity, across groups, mean Flow State and Rating Perceived Exertion were compared. At post-intervention testing, there were statistically significant differences in flow scores as measured by the Flow State Scale between the control group (M = 126.13, SD = 6.78) and the experimental group (M = 145.73, SD = 10.77), (t(28) = 5.96, P < .001) (see Table 1). Furthermore, RPE scores were different between the experimental group (M = 70.80, SD = 2.57) and the control group at post-test (M = 86.20, SD = 3.86) (t(28) = 12.87, P <.001) (see Table 2). Therefore, there was a statistically significant difference between the groups for mean RPE and mean FSS scores.

DISCUSSION AND CONCLUSION

The aim of this study was to assess the effects of mental imagery and motivational self-talk used in combination on perceived exertion and flow experience of Swimrun semi-professional athletes during a real competition. Similar to other researches [46, 47], the present study sought to examine the effects of mental imagery and motivational self-talk on flow intensity as measured by the Flow State Scale and on perceived exertion as measured by CR 100 Borg's scale. The present study expanded upon past research. Indeed, this is the first study to directly compare physical versus physical and mental training using imagery in combination with self-talk in Swimrun that is a relatively new sport endurance. The findings of our study showed that mental training can affect positively both the perception of effort and flow experience of the athletes during their endurance competition. However, our study has some limitations which we have to point out. In our research, the control group did not receive a placebo. The placebo effect refers to a favourable outcome that arises purely from individuals' belief that they have received a beneficial treatment. Increased expectations of performance improvement might account for the effects of some psychological interventions [4]. Indeed, Mc Cormick et al. encouraged sport psychologists to compare psychological interventions with alternative control treatments or inert solutions, pills or capsules that are described as beneficial for endurance performance. Moreover, our study did not consider any physiological determinants as outcome measures of endurance performance [4]. There are various methods of measuring endurance performance in laboratory and field settings. The most commonly used protocols are time-to-exhaustion tests and time trials. Additional measures include constant-duration tests and incremental tests [48]. Numerous researchers argue that VO2 max, the lactate threshold, and economy/efficiency are the most important physiological determinants of endurance performance [49, 50]. Nevertheless, we can expect that a more flow experience and a less perceived exertion at the end of a real endurance competition, correspond to a higher level of endurance performance occurred, consistently with some studies which have found the positive effect of motivational Self-Talk (ST) and mental imagery on endurance performance [13, 51]. Therefore, our study is consistent with other studies which predicted that any physiological or psychological factors affecting perception of effort will affect endurance performance [7, 8]. Indeed, according to Tenenbaum et al., the use of a mental strategy can affect distinct

determinants of effort sensation such as the physical, motivational and affective ones [52]. Moreover, interventions such as sleep deprivation [53], naloxone administration, [54] and mental fatigue [8] have been shown to elevate rating of perceived exertion (RPE) and hinder endurance performance, whereas interventions such as physical training [55], nutritional intake [56] and psycho-stimulant manipulations [57] have been shown to reduce RPE and enhance endurance performance. Given its components, sport is a prime situation to study flow which has been shown to have great value to athletes trying to reach full potential. Self-talk and flow have both been researched and found to have valuable links to higher level athletic performances. Some studies have investigated the relationship between types of self-talk and flow in competition. A significant correlation between motivational self-talk and flow was found in track athletes competing in middle and long distance events during an indoor track meet [58]. The functions of self-talk and flow overlap in a number of ways. Two of the functions of self-talk are to reduce anxiety and build confidence [59]. Motivational self-talk is used to provide self-efficacy, and self-efficacy is a key component to the flow experience [58]. In conclusion, consistently with the Marcora's 'Psychobiological model', our study has highlighted that the use of motivational self-talk in combination with mental imagery, may be useful to improve performance in endurance sports, because the perceived exertion is the main factor limiting both the human performance and endurance activities.

Table 1. Difference between EXP and CON groups for flow state scores.

Group Statistics

Type of Treatment		**N**	**Mean**	**Std. Deviation**	**Std Error Mean**
Flow State Scale	EXP Group CON Group	15 15	145.73 126.13	10.77 6.78	2.78 1.75

Independent Samples Test

		Levene's Test for Equality of Variances		**t-test for Equality of Means**					**95% Confidence Interval of the Difference**	
		F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**Lower**	**Upper**
Flow State Scale	Equal variances assumed	2.21	,148	5.96	28.00	,000	19.60	3.29	12.87	26.33
	Equal variances not assumed			5.96	23.59	,000	19.60	3.29	12.81	26.39

Table 2. Difference between EXP and CON groups for perceived exertion scores.

Group Statistics

Type of Treatment		**N**	**Mean**	**Std. Deviation**	**Std Error Mean**
Borg 100 Cr Scale	EXP Group CON Group	15 15	86.20 70.80	3.86 2.57	1.00 ,66

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Borg 100 Cr Scale	Equal variances assumed	3.04	,092	12.87	28.00	,000	15.40	1.20	12.95	17.85
	Equal variances not assumed			12.87	24.38	,000	15.40	1.20	12.93	17.87

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ORIGINAL ARTICLE
IN ONCOLOGY

Incidence and survival of skin melanoma in Puglia: A comparison with the rest of Italy

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Abstract

Introduction: There is a wide heterogeneity in incidence, prevalence, mortality and survival of skin melanoma through the world and in Italy as well. In this study we investigated, for the first time, incidence, mortality and survival of skin melanoma in Puglia, comparing results with Italian data.
Materials and methods: We collected accurate information about clinical and pathological variables, and measured crude and age-adjusted incidence and mortality rates, and estimated relative and net survival according to Ederer II and Pohar-Perme methods, respectively. Incidence, mortality and survival were performed by district and for the whole Puglia region; internal and external comparisons were done.
Results: Age-adjusted incidence rates per 100,000 inhabitants in males were: Puglia 9.9 (95% confidence interval [CI] 9.1 to 10.8), AIRTUM Italy (AIRTUM pool) 12.0 (95% CI 11.6 to 12.4), Pool of Southern Italian registries (South pool) 7.1 (95% CI 6.6 to 7.6); in females: Puglia 9.7 (95% CI 8.9 to 10.6), AIRTUM pool 11.3 (95% CI 10.9 to 11.7), South pool 6.5 (95% CI 6.0 to 7.0). Age-standardized mortality rates per 100,000 inhabitants were in males and females in Puglia respectively 2.4 (95% CI 2.0 to 2.8) and 1.6 (95% CI 1.3 to 1.9). 5 years age-standardized relative survival was as follows: in males Puglia 81.4% (95% CI 77.0 to 85.0), Italy 81.6% (95% CI 80.4 to 82.8); in females Puglia 87.3% (95% CI 83.3 to 90.4), Italy 88.6% (95% CI 87.6 to 89.6).
Conclusions: Incidence of skin melanoma is higher in Puglia compared with the southern Italy pool and lower compared with the other three Italian macro-areas (central, north-western and north-eastern Italy),but there are not statistically significant differences. A North to South gradient of melanoma skin is showed also in Puglia, except for Bari district where incidence is higher probably due to greater availability of public and private diagnostic centres. Overall mortality and survival in Puglia are very close to Italian estimates. The highest mortality is registered in males in BAT district where also the lowest survival is observed.

KEY WORDS: melanoma, epidemiology; incidence; mortality; registries.

Riassunto

Introduzione: Il melanoma cutaneo presenta un'ampia eterogeneità di incidenza, prevalenza, mortalità e sopravvivenza, sia nel mondo che in Italia. In questo studio abbiamo indagato, per la prima volta, l'incidenza, la mortalità e la sopravvivenza del melanoma cutaneo in Puglia, confrontando i risultati con i dati Italiani.
Materiali e metodi: Abbiamo raccolto informazioni dettagliate su variabili cliniche e patologiche, calcolato i tassi di incidenza e di mortalità grezzi e standardizzati per età e stimato la sopravvivenza netta e relativa secondo i metodi Pohar-Perme ed Ederer II. L'incidenza, la mortalità e la sopravvivenza sono state calcolate per singola provincia e per l'intera regione; sono stati, inoltre, effettuati confronti interni ed esterni.
Risultati: I tassi di incidenza standardizzati per età, per 100.000 abitanti, nei maschi sono i seguenti: Puglia 9,9 (IC 95% 9,1 – 10,8), AIRTUM Italia (pool AIRTUM) 12,0 (IC 95% 11,6 – 12,4), Gruppo dei registri AIRTUM del Sud Italia (pool SUD) 7,1 (IC 95% 6,6 – 7,6); nelle femmine: Puglia 9,7 (IC 95% 8,9 – 10,6), pool AIRTUM 11.3 (IC 95% 10,9 – 11,7), pool SUD 6,5 (IC 95% 6,0 – 7,0). I tassi di mortalità standardizzati per età, per 100.000 abitanti, sono stati in Puglia nei maschi e nelle femmine pari, rispettivamente, a 2,4 (IC 95% 2,0 – 2,8) e 1,6 (IC 95% 1,3 – 1,9). La sopravvivenza relativa standardizzata a 5 anni è stata nei maschi: Puglia 81,4% (IC 95% 77,0 – 85,0), Italia 81,6% (IC 95% 80,4 – 82,8); nelle femmine: Puglia 87,3% (IC 95% 83,3 – 90,4), Italia 88,6% (IC 95% 87,6 – 89,6).
Conclusioni: L'incidenza del melanoma cutaneo in Puglia è più alta della restante parte del Sud Italia ed è più bassa rispetto alle restanti macroaree Italiane (Nord-Est, Nord-Ovest, Centro), con differenze non statisticamente significative. Un gradiente Nord-Sud del melanoma è evidente anche in Puglia, eccetto per la città di Bari dove si rileva un'incidenza più alta per una maggiore disponibilità territoriale di centri diagnostici pubblici e privati. La mortalità e la sopravvivenza complessive pugliesi sono paragonabili a quelle italiane.

TAKE-HOME MESSAGE

Incidence of skin melanoma in Puglia is higher when compared with the rest of southern Italy. This is the first study of incidence, mortality and survival of skin melanoma in Puglia, by district, and its results are suitable for policy makers in order to direct primary and secondary prevention of melanoma skin using foremost awareness-raising campaigns in schools and in medical surgeries.

Competing interests - none declared.

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INTRODUCTION

Skin melanoma is a malignancy rising from transformation of melanocytes. Incidence and prevalence of melanoma depend on genetic, phenotypic and environmental factors, survival mostly depends on early diagnosis and opportunistic screening; therefore incidence, prevalence, mortality and survival vary considerably world-wide. Incidence rates and prevalence are higher in populations where Caucasians predominate, and lower in countries where inhabitants have an Asian or an African origin [1–3]. It has been noticed that skin melanoma is the malignancy with the most impressive upward time-trend in incidence in western countries, however this increasing trend observed in last decades is believed to be mostly due to a higher diagnostic pressure. In Italy, it is characterized by an annual percentage change (APC) of about 3% [4]. Mortality and survival depends also by diagnostic skills and techniques and by reliable therapies: the prognosis of skin melanoma was actually worse in the past, however it improved largely in last years [5–7] and mortality trend is stable in women and slightly decreasing in men [4]. An important inverse correlation was found also between incidence of skin melanoma and latitude [8, 9], and indeed incidence decreases from North to South in the northern hemisphere and a similar gradient was retrieved in Italy [10]. In melanoma, a great role in improving the prognosis is related to primary and secondary prevention campaigns, the first based on the reduction of exposure to sun rays and the use of anti UV sunscreen and the second on the application of the A-B-C-D-E rule for auto-detection and the early diagnosis by expert dermatologists. Using data provided by the Cancer Registry of Puglia (RTP) we investigated incidence and survival of skin melanoma in this region of South Italy and we compared them with data from other Italian macroareas (North-East, North-West, Centre and South Italy) [11]. Before our study, few information was known about the incidence of melanoma in the Apulian population; information about survival derived all by clinical trials that are not population-based, instead as in our case. RTP is a regional population-based cancer registry, active since 2008 to ensure standardized and comparable data about oncological phenomena in a large Italian region characterized by a structural variability and high health migration. Puglia consists of six administrative districts (Foggia, Barletta-Andria-Trani - BAT, Bari, Brindisi, Taranto and Lecce) and in every district a Health Local Unit (HLU) exists. RTP has been instituted with a regional deliberative act and it has been structured to answer to the needs of homogeneity and comparability of data. RTP consists in an Operating Coordination Centre, located in the Cancer Research Institute in Bari, which supports six sections in each HLU. This kind of network allows an abiding interchange of knowledge and information between RTP researches but, at the same time, it ensures a local autonomy work and responsibility. Four of the six sections (BAT, Brindisi, Lecce and Taranto) are at the present time accredited by Italian Network of Cancer Registries (AIRTUM). Actually, the section of Bari does not include the whole district, but eight municipalities (Bari, regional and district capital city, Bitetto, Bitritto, Conversano, Modugno, Mola di Bari, Polignano a mare and Rutigliano) which cover 37% of the district population. In our study, we privileged the representativeness of the data of incidence across the whole region, so that all sections have participated with the incident cases of skin melanoma available, however data from not accredited sections have been subjected to quality controls similar to those required for AIRTUM accreditation to ensure comparability. Main aims of the study were to examine whether in Puglia it is found a north-south gradient in melanoma incidence and mortality, and which is the rank of Puglia in relation to the rest of South Italy and whether there are differences in survival in intra- and extra- regional comparisons.

MATERIALS AND METHODS

We included all incident cases of invasive skin melanoma diagnosed in Puglia in 2006 – 2008 (since the Bari district is partially

subjected to oncological recording, 80% of the regional population is covered). Age-adjusted incidence rates obtained by direct standardization (DSR) using European population were calculated and they were compared with Italian data provided by AIRTUM [11]. We collected the following pathological and clinical biological variables: TNM and stage at diagnosis, morphology, Clark level, Breslow depth, skin site, phase of growth, cell type, histotype, vascular invasion, ulceration, regression, residual nevus, number of mitotic figures. A simplified staging according to the rules of summary staging provided by the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute by United States, was carried out: localized if the tumour is limited to the site of origin, regional if only regional lymph nodes are involved and distant if distant metastasis have occurred [12]. In a second step we analysed mortality data for skin melanoma, provided by Italian National Institute of Statistics (ISTAT) for the whole regional area [13]. We calculated age-adjusted incidence rates obtained by direct standardization (DSR) using European population for each district and we compared them with Apulian data overall. In a third step, survival of skin melanoma in Puglia, by district, was evaluated both in terms of relative survival according to Ederer II method [14], and in terms of net survival according to Pohar-Perme's method [15, 16]. Survival was evaluated for the cases with histological confirmation and more than 15 years old. Therefore, age-standardized relative survival, stage standardized relative survival and net survival curves have been realized and 5-years survival has been compared across Apulian districts and with data of the AIRTUM pool of Italian cancer registries. However, since the values are very similar and only the reference data with the relative survival are currently available for comparison, only relative survival is shown. Differences in incidence, mortality and survival among areas were considered statistically significant when their confidence intervals were not overlapped.

RESULTS

Incidence

1134 cases of skin melanoma were registered in Puglia in the 2006-2008 period, with equally distribution between genders (51.3% females and 48.7% males). The most represented districts were Bari and Foggia (Table 1); BAT shows the lower median age at diagnosis while Lecce and Brindisi show the higher (Table 1). Trunk, followed by legs, was the most frequent site group of melanoma skin in Apulian region (Table 2). Histologic confirmation was present in 1,113 cases (98%). Information about one of the most important prognostic factor as Breslow depth was available in 99% of cases (Table 2). The most frequent morphology was the superficial spreading, followed by nodular morphology (Table 2). Information for summary staging was available in 81% of cases and stage distribution was variable by district (Table 3). Age standardized rates by gender and by area are shown as follows: Males (Fig. 1): Bari (BA) 17.4 (95% confidence interval [CI] 11.9 to 17.4), Barletta-Andria-Trani (BT) 10.8 (95% CI 8.4 to 13.8), Brindisi (BR) 8.8 (95% CI 6.6 to 11.4), Foggia (FG) 11.1 (95% CI 9.2 to 13.4), Lecce (LE) 5.8 (95% CI 4.6 to 7.2), Taranto (TA) 10.6 (95% CI 8.7 to 12.8), Puglia 9.9 (95% CI 9.1 to 10.8), AIRTUM Italy (AIRTUM pool) 12.0 (95% CI 11.6 to 12.4), Pool of Southern Italian registries (South pool) 7.1 (95% CI 6.6 to 7.6). Females (Fig. 1): BA 14.4 (95% CI 11.9 to 17.2), BAT 8.7 (95% CI 6.6 to 11.4), BR 8.2 (95% CI 6.3 to 10.7), FG 10.1 (95% CI 8.3 to 12.4), LE 7.9 (95% CI 6.5 to 9.5), TA 9.7 (95% CI 7.9 to 11.9), Puglia 9.7 (95% CI 8.9 to 10.6), AIRTUM pool 11.3 (95% CI 10.9 to 11.7), South pool 6.5 (95% CI 6.0 to 7.0). Moreover, a subgroup analysis on the young population was performed; we explored incidence in < 40 years old population and we found a difference in rates between sexes, mostly in the last two years available; in particular, age standardized incidence in young males in 2006, 2007 and 2008 was respectively 1.5, 1.1, 2.1 (per

100,000 inhabitants) while in young females was 1.4, 2.7, 3.1 (per 100,000 inhabitants).

Mortality

303 deaths for skin melanoma occurred in Puglia in the 2006-2008 period. Age standardized rates by gender and by area are shown in Figure 2. Males: Bari (BA) 2.2 (95% CI 1.6 to 3.0), BAT (BT) 3.3 (95% CI 2.3 to 5.1), Brindisi (BR) 2.2 (95% CI 1.2 to 3.6), Foggia (FG) 2.5 (95% CI 1.3 to 3.7), Lecce (LE) 2.2 (95% CI 1.5 to 3.2), Taranto (TA) 2.8 (95% CI 1.9 to 4), Puglia 2.4 (95% CI 2 to 2.8), Southern Italy 1.99 (95% CI 1.89 to 2.08), Italy 2.53 (95% CI 2.47 to 2.59). Females: BA 2.1 (95% CI 1.5 to 2.8), BAT 1.8 (95% CI 0.9 to 3.2), BR 1.0 (95% CI 0.5 to 2.1), FG 1.6 (95% CI 0.9 to 2.6), LE 1.1 (95% CI 0.6 to 1.7), TA 1.4 (95% CI 0.8 to 2.3), Puglia 1.6 (95% CI 1.3 to 1.9), Southern Italy 1.33 (95% CI 1.25-1.41), Italy 1.48 (95% CI 1.43-1.52).

Survival

We analysed the 5 years age-standardized relative survival by gender, which as regard to males was in Puglia 81.4% (95% CI 77.0 to 85.0), and in Italy 81.6% (95% CI 80.4 to 82.8); for females it was in Puglia 87.3% (95% CI 83.3 to 90.4), in Italy 88.6% (95% CI 87.6 to 89.6). Relative survival in Puglia by SEER stage, adjusted for age was as follows: localized 96.2% (95% CI 92.1 to 98.2), regional 53.2% (95% CI 43.7 to 61.9), distant 10.9% (95% CI 3.7 to 22.5), unknown 80.0% (95% CI 72.5 to 85.6%). There was considerable heterogeneity in the age-standardized relative survival for the different districts of Puglia. Males (Fig. 3): BA 86.2% (95% CI 74.7 to 92.7), BT 70.5% (95% CI 54.5 to 81.7), BR 80.7% (95% CI 66.4 to 89.4), FG 83.0% (95% CI 72.7 to 89.7), LE 82.5% (95% CI 68.7 to 90.6), TA 85.2% (95% CI 74.9 to 91.5). Females (Fig. 4): BA 90.4% (95% CI 78.3 to 95.9), BT 82.2% (95% CI 63.8 to 91.8), BR 79.8% (95% CI 64.9 to 88.8), FG 91.9% (95% CI 82.5 to 96.3), LE 85.6% (95% CI 76.1 to 91.5), TA 91.0% (95% CI 75.9 to 96.9).

Table 1. Province distribution and age of skin melanoma cases in the Apulian region.

			Age		
Province	**Frequency**	**%**	**median**	**Avg**	**std. dev.**
BA	240	21.1	57.5	56.7	16.1
BT	126	11.1	53.5	53.9	17.5
BR	125	11.0	59.0	58.5	16.5
FG	235	20.7	57.0	56.4	17.7
LE	198	17.5	59.0	57.3	16.6
TA	210	18.5	56.5	55.7	18.0
Total	1134	100.0			

Table 2. Distribution of site group, Breslow depth and morphologies of skin melanoma cases in the Apulian region.

Site group	**Frequency**	**%**
Trunk	434	38.3
Legs	287	25.3
Arms	206	18.2
Head	109	9.6
Neck	9	0.8
Unknown	89	7.9
Total	1134	100
Breslow depth	**Frequency**	**%**
<= 1 mm	484	43.0
1.01 – 2.00 mm	193	17.2
2.01 – 4.00 mm	161	14.3
> 4.00 mm	129	11.5
Unknown	158	14.0
Total	1125	100.0
Morphologies	**Frequency**	**%**
Superficial spreading	444	39.9
Nodular	164	14.7
Skin melanoma, NAS	145	13.0
Lentigo maligna	22	2.0
Acral lentiginous	9	0.8
Others	329	29.6
Total	1113	100.0

Table 2. Distribution stage of skin melanoma cases stage by Apulian district, cases with histological confirmation.

	Stage (%)				
District	**Local**	**Regional**	**Distant**	**Unknown**	**Total**
BA	71.3	11.7	2.9	14.2	100.0
BT	60.3	15.1	7.1	17.5	100.0
BR	48.4	13.7	8.9	29.0	100.0
FG	69.7	10.3	2.1	18.0	100.0
LE	57.1	6.1	5.6	31.3	100.0
TA	61.0	16.2	3.8	19.1	100.0
Total	62.8	11.8	4.5	20.9	100.0

Figure 1. Incidence rates of skin melanoma by Apulian district, per 100,000 inhabitants, males and females and comparison with Italy.

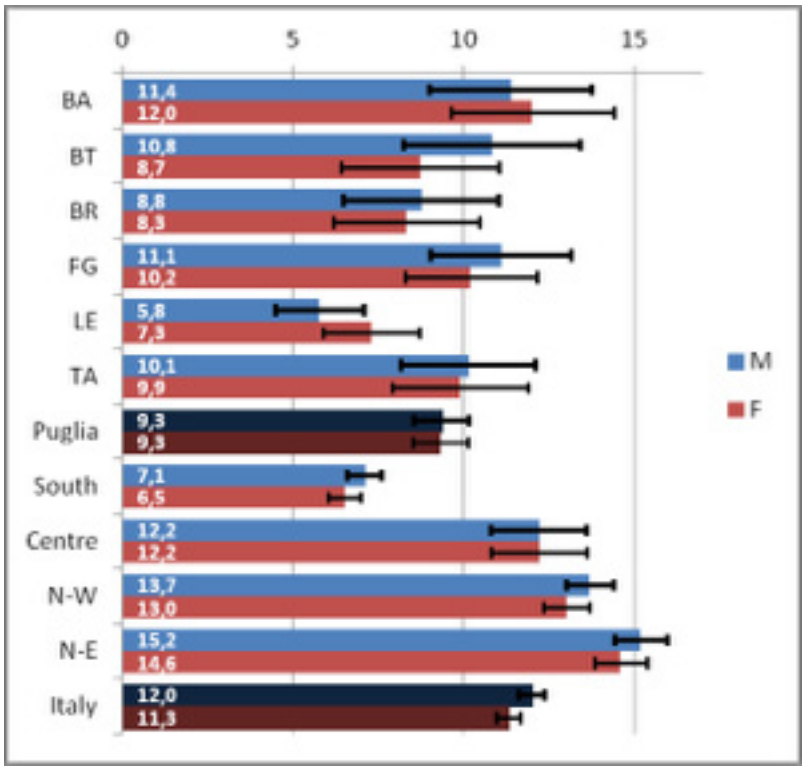


Figure 2. Mortality rates of skin melanoma by Apulian district per 100,000 inhabitants, males and females and comparison with Italy.

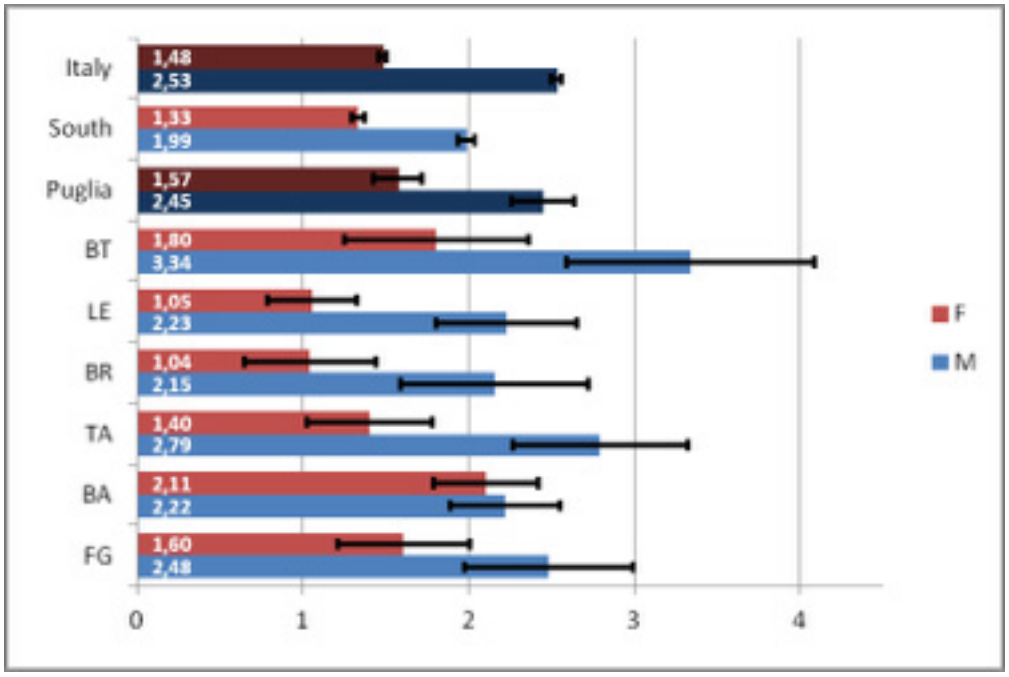


Figure 3. Relative survival of skin melanoma (EDERER II method) by Apulian district: Males.

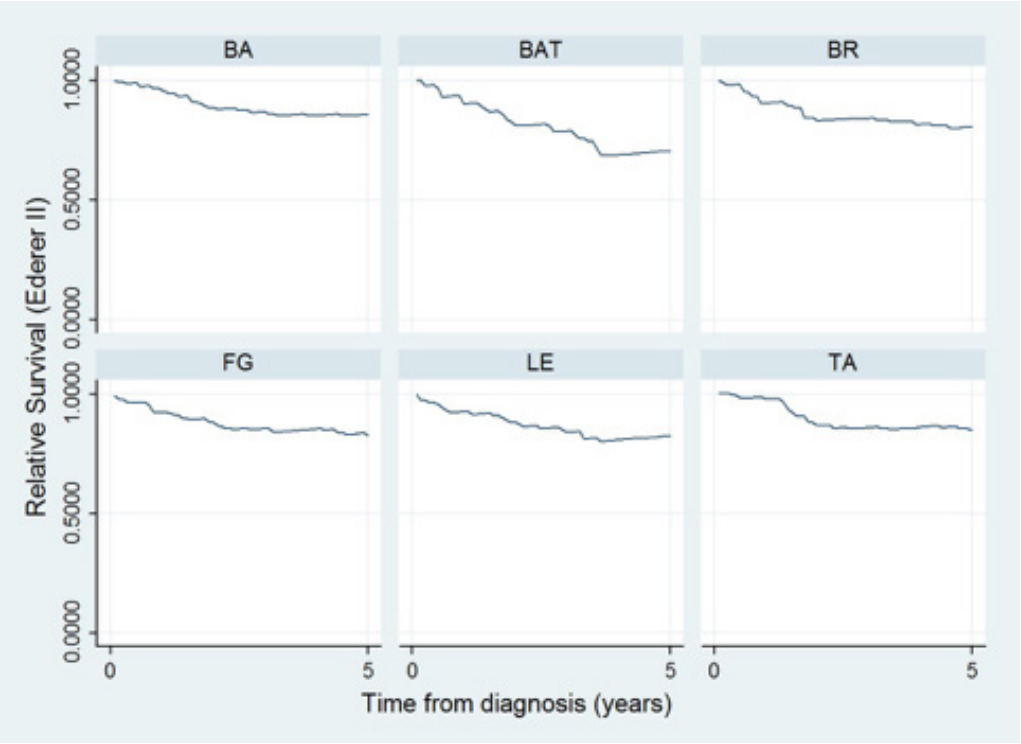
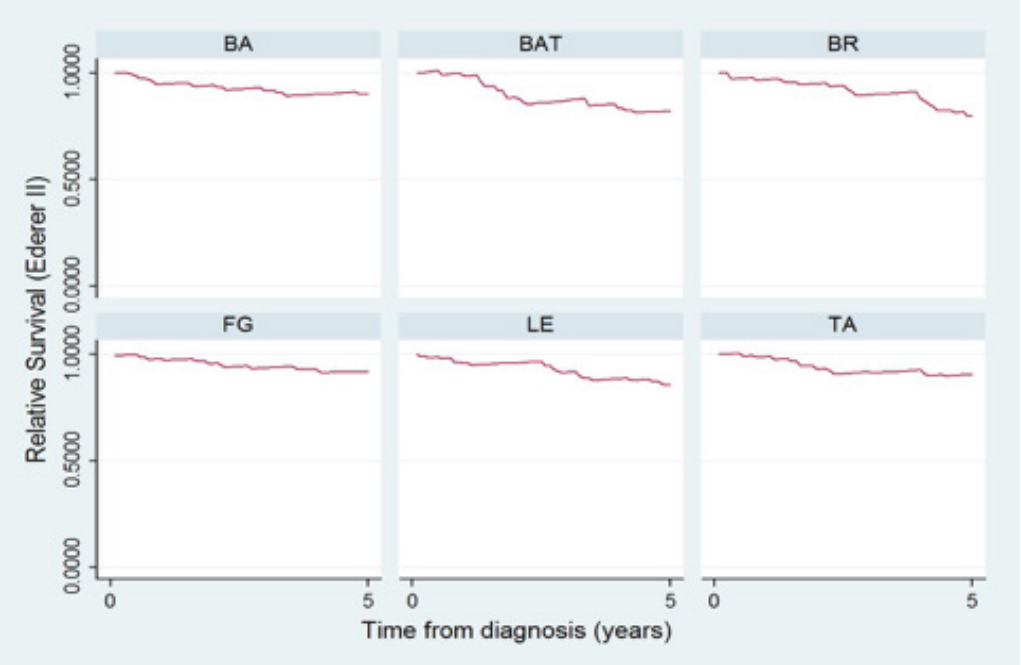


Figure 3. Relative survival of skin melanoma (EDERER II method) by Apulian district: Females.



CONCLUSIONS

Incidence of skin melanoma in Puglia is higher than in the southern Italy pool and lower than in the other three Italian macro-areas, without statistically significant differences. Therefore, this study adds an important element to the knowledge of geographical distribution of skin melanoma incidence in Italy, where a North to South gradient was already described. In Puglia itself a similar gradient can be observed, since the district with the lowest incidence is Lecce, which is the southernmost; Bari district shows the highest incidence, perhaps because it is a metropolitan area, where the opportunistic screening is more common and where there is a greater availability of public and private diagnostic centres; these data will be examined in further detail in order to interpret the ways of access to early diagnosis in Bari district in comparison to the other ones. This study is also an important example of the cooperation among the different sections of the RTP and results are characterized by high accuracy and good level of detail since cancer registry data represent the best approximation to the true cancer incidence in a population. The major limitations of the study were the short time period (three years) needed to ensure coverage of the entire region, and the time gap which depends on the complexity of accurate and complete cancer registration in a large region. However, for some districts more recent data (until 2012) and longer time periods (up to seven years) are already available. It would be also important to improve the capacity of staging in particular for the 'N' (lymph nodes) and 'M' (distant metastasis) of the TNM classification, information that is needed in order to carry out reliable prognostic assessment and survival estimates. Mortality of skin melanoma reflects mainly the earliness or lateness of diagnosis, rather than the incidence. High age-adjusted rates in BAT district, followed by Taranto in males are probably related to late diagnosis and advanced stages; in females high mortality rates in Bari, followed by BAT need further investigations. 5-years survival for melanoma in Puglia does not show a statistically significant difference from that of the whole AIRTUM pool, but it is higher than survival in the pool of southern registries. The heterogeneity in the estimated survival for the different districts of Puglia can be attributed to a different propensity to early detection; this interpretation is also supported by the different distribution of stage in the six districts. It is possible that the availability of specialized structures for the early diagnosis of melanoma, not equally distributed in the region, may affect early diagnosis and consequently survival.

Finally, our analysis is the first about incidence and survival of skin melanoma in a whole southern Italian region through cancer registry data and it can suggest hypotheses to be investigated with analytical studies. Moreover, we demonstrated an increment of incidence in young people, especially in women, as showed in literature; this result can be considered as a starting point for future research, using incidence data for a longer period of time. The cancer registry data have an inherently descriptive nature and allow ecological comparisons among different areas. It would be interesting to investigate in addition to the most well-known risk factors to which the greatest attributable risk is recognized, such as phenotype and solar exposure, other risk factors, primarily of a chemical nature, such as polychlorinated biphenyls [17], pesticides [18], dioxins [19]. However, to reach this objective it is needed on the one hand the achievement of many years of incidence, on the other the implementation of case-control studies to collect information about occupational, environmental and recreational risk factors.

Finally, data from this study are especially suitable for policy makers, public health managers, dermatologists, general practitioners, ordinary citizens in order to address inequalities of attention and access to diagnosis and treatment of skin melanoma; data should be also used for awareness-raising campaigns in schools, medical clinics, in order to improve primary and secondary prevention of this disease.

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ORIGINAL ARTICLE IN PSYCHOLOGY

Exploring individual differences in online and face-to-face help-seeking intentions in case of impending mental health problems: The role of adult attachment, perceived social support, psychological distress and self-stigma

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Abstract

Background: Even though common mental health problems such as depression are a global burden calling for efficient prevention strategies, still many distressed individuals face hurdles to access public mental healthcare. Thus, computerized Internet-based psychological services have been suggested as viable approach to overcome barriers, such as self-stigma, and to inform the access to professional support on a large scale. However, little research has targeted predictors of online and face-to-face help-seeking intentions.
Objective: This study aimed at determining whether associations between attachment insecurity and the willingness to seek online versus face-to-face counselling in case of impending emotional problems are mediated by both perceived social support and psychological distress and moderated by self-stigma.
Methods: Data was collected from 301 adults from the German-speaking general population (age: *M* = 34.42, *SD* = 11.23; range: 18 - 65 years; 72.1% female) through an anonymous online survey. Determinants of seeking help were assessed with the self-report measures Experiences in Close Relationship-Scale, Perceived Stress Questionnaire, ENRICHD-Social Support Inventory and an adapted version of the General Help Seeking Questionnaire (i.e. case vignette). Mediation analyses were performed with the SPSS-macro PROCESS by Hayes.
Results: About half of the sample indicated being not aware of online counselling. As expected, insecure attachment was associated with less perceived social support and increased psychological distress. Mediational analyses revealed negative relationships between both attachment avoidance and self-stigma with face-to-face help-seeking intentions. Moreover, the relationship between attachment anxiety and the willingness to seek face-to-face counselling was mediated by social support. In contrast, none of the predictors of online counselling was statistically significant.
Conclusions: Overall, this study identified negative associations between both attachment avoidance and self-stigma with face-to-face help-seeking intentions, whereas determinants of seeking online counselling remained largely unclear. Further research is required to identify the role of e-awareness and e-mental health literacy in terms of online counselling uptake.

KEY WORDS: mental health; health care seeking behavior; community mental health services; telemedicine.

Riassunto

Introduzione: Anche se i disturbi mentali comuni come la depressione hanno un carico globale che richiede efficaci strategie di prevenzione, molti individui affetti da distress psicologico affrontano ancora ostacoli nell'accedere ai servizi pubblici di assistenza psichiatrica. Così i servizi psicologici basati sull'uso di Internet sono stati proposti come una strada percorribile per superare le barriere come l'autostigma e per dare informazioni riguardanti l'accesso al couselling professionale su larga scala. Tuttavia, è stata effettuata poca ricerca sui predittori della ricerca di aiuto "on line" e "faccia a faccia".
Obiettivo: Questo studio ha l'obiettivo di stabilire se l'associazione tra l'attaccamento "insicuro" e l'inclinazione a cercare un consulto psicologico "online" rispetto a quello "faccia a faccia" in caso di soggetti affetti da disturbi emotivi, sia mediata dal supporto sociale percepito e dal distress psicologico e sia moderato dall'autostigma.
Metodi: I dati furono raccolti da 301 individui adulti provenienti dalla popolazione generale di lingua tedesca (età: *M* = 34.42, *SD* = 11.23; range: 18 - 65 anni; 72.1% di sesso femminile) attraverso un questionario anonimo somministrato online. I determinanti della ricerca di aiuto psicologico sono stati valutati con misure auto riportate attraverso i seguenti questionari: "Experiences in Close Relationship-Scale", "Perceived Stress Questionnaire", "ENRICHD-Social Support Inventory" ed una versione adattata del "General Help Seeking Questionnaire- Vignette version". Le analisi statistiche del modello di mediazione sono state effettuate con il "Process Macro" di Hayes per SPSS.
Risultati: Circa metà del campione ha riferito di non conoscere il counseling on line. Come atteso, l'attaccamento "insicuro" era associato ad un minore supporto sociale percepito ed un aumentato distress psicologico. Le analisi di mediazione hanno rivelato una relazione negativa tra l'intenzione di cercare aiuto "faccia a faccia" e lo stile di attaccamento "evitante" così come con l'autostigma. Inoltre, la relazione tra lo stile di attaccamento "ansioso" e la disponibilità a cercare il counselling "faccia a faccia" era mediato dal supporto sociale. In contrasto, nessuno dei predittori di counselling online è risultato statisticamente significativo.
Conclusioni: Nel complesso questo studio ha identificato delle associazioni significative tra l'intenzione di cercare aiuto "faccia a faccia" e lo stile di attaccamento "evitante" cosi come con l'autostigma, laddove i determinanti sulla ricerca del counselling psicologico on line sono rimasti per la maggior parte poco chiari. Ulteriore ricerca è necessaria per identificare il ruolo della conoscenza di internet e della letteratura sulla salute psicologica in internet in termini di utilizzo del counselling online.

TAKE-HOME MESSAGE

Study findings confirmed both attachment avoidance and self-stigma as psychological barriers to seek face-to-face counselling in case of impending emotional problems. To provide clear evidence for determinants underlying online and face-to-face help-seeking intentions, though, further research scoping on the role of individual and public preferences towards self-help services is required.

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INTRODUCTION

Considering the rising lifetime prevalence of mental health disorders, amounting up to one-third of populations worldwide [1], common health problems such as depression require efficient large-scale prevention strategies [2]. However, many individuals with emotional problems fail to receive professional help in traditional face-to-face mental healthcare settings [3–5]. Reasons for the discrepancy between the demand and utilization of mental health services are complex and associated with both obstacles on the side of healthcare and individuals; though, this paper will focus on psychological aspects to understand individual facilitators and barriers of seeking help in case of emotional problems. For instance, psychological factors such as attitudes, outcome expectancies [6], self-stigma [7–10] and adult attachment style [11] have been investigated as determinants of (face-to-face) help-seeking intentions. Regarding obstacles linked to face-to-face contexts, such as stigmatization of mental illness, modern technologies could extend seeking help options.

Given the public acceptance of the Internet as everyday information source for mental health purposes, Internet-based computerized, respectively electronic mental health (e-mental health) services have been proposed as accessible and effective self-help options to overcome barriers to access mental healthcare [12–14]. E-mental health uses new media and modern technology to provide of digital psychological services in healthcare areas such as health promotion, prevention, counseling and therapy [12, 15]. With respect to the global burden of mental disorders [16] and treatment gaps in mental healthcare [17], the dissemination of e-mental health has been suggested as chance to improve the general access to healthcare [18]. While stages of implementation of web-based treatments (e.g. behavioral therapy) into primary care vary internationally, online counselling is publicly available in many countries, usually provided free of charge, without waiting time and anonymously accessible [19]. However, despite the steadily growing evidence base on the effectiveness of e-mental health services for common mental health problems, little is known about factors influencing public preferences and the individual willingness to use online counselling in case of emotional distress [9, 20].

Within the face-to-face help-seeking contexts, personality facets such as attachment style have been identified as relevant predictors. Attachment theory [21–23] provides insights into role of key motivational mechanisms involved in socioemotional development and regulation of proximity in close relationships affecting interpersonal functioning, emotion regulation, stress coping and mental health over the life span [23, 24]. Starting at early infant-caregiver interactions, the scope of attachment theory has been extended to diverse interpersonal settings and attachment figures in adulthood, including help seeking and utilization of healthcare in times of distress [25, 26]. Accordingly, the attachment behavioral system is activated by psychological distress (i.e. significant others´ function as 'safe haven'), while the exploration behavioral system enables learning processes when individuals feel safe and comfortable (i.e. significant others´ function as 'secure base'). Over the life course, individuals are assumed to subsequently develop relative stable 'internal working models (IWMs)'. Defined as implicit cognitive schemata (attachment representations), IWMs include a 'model of the self' (e.g. self-efficacy) and a 'model of others' (e.g. perceived reliance of others), which build the basis for interpersonal expectations, attitudes and behavioral strategies (social information processing) [22, 27–31]. Overall, IWMs can vary from positive (i.e. resiliency of the self, relying in the responsiveness of others) to negative expectations (i.e. vulnerable or incompetent 'self-model', perceiving others as unreliable [32]. Since positive IWMs reflect attachment security, negative IWMs signify attachment insecurity, which can be described along a continuum of two dimensions: attachment anxiety (negative model of the self, positive model of others) and attachment avoidance (positive 'model of self' and

negative 'model of others') [33–35]. These dimensions have been applied to integrate both IWMs and attachment style taxonomy, which includes four attachment styles in adulthood, mostly termed as secure, dismissive-avoidant, anxious-preoccupied and fearful-avoidant [30, 31, 35]. In contrast to developmental and clinical psychology, research in the field of health and social psychology mostly measures adult attachment via self-report instruments scoping on close/romantic relationships [33]. On the one hand, securely attached individuals tend to feel comfortable with closeness and seeking support, are capable of acknowledging distress [33, 36] and more likely to develop self-esteem (positive 'model of the self') and interpersonal trust (positive 'model of others') [35]. On the other hand, research evidence suggests that attachment insecurity is linked to mental health risks due to '*increased susceptibility to stress, increased use of external regulators of affect, and altered help-seeking behavior*' ([32], p. 556). Typically, attachment anxiety is reflected by hyper-activating strategies that include hypervigilance towards subjective threats for well-being and increased utilization of healthcare services [37, 38]. In contrast, avoidant individuals tend to express lower self-disclosure and discomfort with seeking help [36, 39]. While avoidant attachment has been confirmed as negative predictor of help-seeking behavior [40], attachment anxiety appears to result in an increased willingness to seek professional support in times of distress [37, 38]. Vogel and Wei [25] have confirmed the hypothesis that the relationship between attachment and help-seeking intentions was mediated by both psychological distress and perceived social support. As expected, both attachment avoidance and anxiety were associated with lower perceived social support and increased distress in a students´ population. While attachment anxiety was linked with acknowledging distress and informed help-seeking intentions, attachment avoidance with denying distress and reluctance to seek help from counselling [25]. Compared to secure attachment, both higher attachment avoidance and/or anxiety (i.e. insecure attachment) were found being associated with less perceived social support and increased psychological distress [25]. Considering that social support can act as a 'buffer' against negative health effects of stress [41], attachment style can predict variations in distress [25, 42] and the willingness to seek help [43].

However, currently it remains unclear whether predictors of help-seeking intentions regarding face-to-face counselling are transferable to online counselling, too. For example, self-stigma, which is given when an individual views oneself being fragile and inferior requiring psychological help [44–46], could be less influential psychological barrier on the Internet, since online help services can be accessed anonymously [9]. Accordingly, an Australian online survey using a community sample [9] revealed higher self-stigma among 'e-preferers' (persons with preference to online over face-to-face help services) in comparison to the majority of 'non e-preferers' (about three thirds of the sample). Hence, Klein and Cook [9] concluded that e-mental health has the potential to hamper negative effects of self-stigma among 'e-preferers'. Taken together, research evidence indicates a need for identifying predictors of seeking psychosocial counselling in order to derive strategies to inform help-seeking behavior in public mental health promotion.

Objective

The aim of the present pilot survey was to examine perceived social support and psychological distress as mediators and self-stigma as moderator in the relationship between attachment quality and both face-to-face and online help-seeking intentions (in terms of the likelihood of seeking counselling in case of mental health problems) among healthy adults.

Main Hypothesis (1): The relationship between attachment quality and help-seeking intentions are mediated by both perceived social support and psychological distress.

Consequently, we hypothesized mediating effects of perceived social support and psychological distress on the positive association between attachment anxiety and both online help-seeking intentions (Hypothesis 1a) and face-to-face help-seeking intentions (Hypothesis 1b). Additionally, we hypothesized mediating effects of perceived social support and psychological distress on the negative association between attachment avoidance and both online help-seeking intentions (Hypothesis 1c) and face-to-face help-seeking intentions (Hypothesis 1d).

Secondary Hypothesis (2): Self-stigma moderates the relationship between attachment quality and help-seeking intentions.

Accordingly, we assumed moderating effects of self-stigma on the positive relationship between attachment anxiety and face-to-face help-seeking intentions (Hypothesis 2a). Finally, we assumed moderating effects of self-stigma on the negative relationship between attachment avoidance and online help-seeking intentions (Hypothesis 2b).

METHODS

The present cross-sectional survey on help-seeking intentions in the general population employed a quasi-experimental study design. Data was based on self-report measures and collected through an open access online survey between May and June 2016 at the Department of Health Psychology at the University of Hagen ('FernUniversität in Hagen'), which is both the largest and only state-maintained distance teaching university in Germany.

Sample recruitment and data collection

Adults from the general population, including university students, were recruited through social media websites (e.g. Facebook, LinkedIn), Moodle 2.0 (virtual education platform), e-mail, flyer and personal networks (e.g. community, workplaces), using snowballing techniques. The exploratory research strategy for this pilot study involved nonprobability sampling recruiting persons from public with access to the Internet. We did not employ strategies to select participants from the targeted population, such as randomization. The survey was anonymously available for respondents. The study advertisement included a link to access the online survey platform that included the study information.
Inclusion criteria for participation were a) self-reported age of 18 years or older, b) provided informed consent and c) relatively good health state (subjective assessment). Persons were asked to participate in the survey only if there were no indications for acute or chronic mental health problems. However, we relied on self-reports of persons who accessed the online survey interface. Exclusion criteria contained: a) lacking informed consent statement; b) incomplete data or dropout; and c) implausible response patterns. Undergraduate psychology students enrolled at the University of Hagen could obtain 0.25 credits for participation via the 'virtual lab'. No financial compensation was offered. Ethical approval was not required for this survey. This survey was conducted in accordance to applicable German legal regulations (e.g. data security) and ethical principles of the Helsinki Declaration (64th WMA assembly, 2013, Fortaleza, Brazil), respectively the German Psychological Association.

Participants of the survey

The sample consisted of 301 respondents. The average age amounted to 34 years (M = 34.42, SD = 11.23; range: 18 to 65 years; 6% missing). Most respondents indicated female as gender (72.1%, n = 217), while 27.2% (n = 82) reported being male (missing: 0.7%, n = 2). In total, 43.5% of 301 participants indicated being a current or past psychology student. More than half of the respondents (54.5%) stated being married or living in a close relationship. Further 38.5% indicated being single or unmarried, 5.0% divorced/living separated and 0.7% widowed as marital status. Most participants (41.9%) reported an upper secondary educational level as highest attained qualification (e.g. advanced certificate of education, German 'Abitur'). In addi-

tion, another third of the sample (36.9%) reported higher/tertiary educational level (e.g. university degree, such as Bachelor or Master of Science); taken together, more than three-third of the respondents (78.8%) indicated an upper secondary or tertiary education. Moreover, additional 15.3% of the sample stated as accomplished vocational training (e.g. German dual education system). The proportion of lower than secondary education level amounted to overall 5.9% (e.g. intermediate school-leaving certificate).

Measures and procedure

Initially, participants received general information about the study and the informed consent statement. Subsequently, respondents were asked to complete different self-report measures. The overall completion time of the survey amounted to 15 minutes (± 5 minutes) in average. This online survey was performed using Unipark software (Questback, Cologne, Germany).

Descriptive data

Participants were asked to answer socio-demographic questions (i.e. age, gender, relationship/marital status, education and employment). Next, respondents were asked to indicate previous experience with online counselling, face-to-face counseling and with traditional face-to-face psychotherapy (response options: 'yes' or 'not'). We did not ask for experience with online therapies because they are not permitted in Germany [18, 19]. In addition, participants were asked to indicate if they were aware of the existence of both online counselling and Internet-based psychotherapy for mental health problems (i.e. 'e-awareness'; response options: 'yes, 'not' and 'not sure').

Experiences in Close Relationship Scale - Short Form (ECR-S)

We used a German translation of the 12-item measure ECR-S [47] to assess the attachment quality, reflected by the dimensions attachment anxiety and avoidance (six items per dimension). Higher levels of attachment anxiety can be found in anxious-avoidant and anxious-fearful adults, whereas higher attachment avoidance can be observed in dismissive-avoidant adults. Securely attached persons tend to score lower on both attachment anxiety and avoidance [33-35]. Participants were asked to indicate how they usually feel in close relationships for each of the 12 statements on a 7-point Likert scale, ranging from 1 'strongly disagree' to 7 'strongly agree' (e.g. item 11: 'I usually discuss my problems and concerns with my partner'). Alpha reliability amounted to $\alpha = .63$ (attachment anxiety) and $\alpha = .74$ (attachment avoidance).

ENRICHD Social Support Inventory – Deutsch (ESSI-D)

The 5-item EESI-D [48] is a German ESSI-adaptation that was used to measure perceived social support across different situations on a 5-point Likert scale, ranging from 1 'none of the time' to 5 'all of the time' (e.g. item 2: 'Is there someone available to give you good advice about a problem?'). Alpha reliability amounted to $\alpha = .87$.

Perceived Stress Questionnaire (PSQ-20)

The 20-item German short-version of the PSQ [49] was used to assess the incidence of stressfully perceived events or situations within the past four weeks on a 4-step rating scale, ranging from 1 'almost never' to 4 'usually' (e.g. item 17: 'You feel mentally exhausted'). The PSQ-20 consists of four subscales (i.e. worries, joy, tension and demands) and an overall score, which was used for the mediation analyses. Alpha reliability amounted to $\alpha = .94$.

Self-Stigma of Seeking Help Scale (SSOSH)

A German translation of the 10-item measure SSOSH [50] was used to evaluate perceived self-stigma of help-seeking on a 5-step rating scale, ranging from 1 'strongly disagree' to 5 'strongly agree' (e.g. item 6: 'It would make me feel inferior to ask a therapist for help'). Alpha reliability amounted to $\alpha = .84$.

Case Vignette (Help-Seeking Intentions)

Based on the General Help-Seeking Questionnaire – Vignette Version (GHSQ-V) [51], a case vignette was developed to determine the willingness to future use both online and face-to-face counselling in case of mental health problems. To ensure comparability of results, a common (not requiring treatment) mental health problem was described. For this purpose, participants received a brief description of common unspecific complaints of depressive mood, such as loss of energy and drive, poor sleep quality, poor attention/concentration and appetite. By these means, it was intended that healthy participants can better empathize a fictional situation for help-seeking in the absence of suffering from mental health problems. However, the adaption was not applied to screen for mental illness, but for the identification of counselling provision mode preferences. To determine help-seeking intentions, participants were provided with brief information about two fictional counselling services delivered online or face-to-face. To ensure the comparability of basic service features in terms decision-making conditions both services were described as free of charge, accessible without appointment, providing material about mental health problems and, if desired, offering contact information about psychotherapeutic service providers, such as regionally located qualified psychologists. Participants were asked to indicate, how likely it is that would seek help from (1) tailored chat-based online counselling and (2) face-to-face counselling at a public socio-psychiatric setting on a 7-point rating scale, ranging from 1 'extremely unlikely' to 7 'extremely likely'.

Statistical analyses

Statistical analyses were performed using SPSS, version 23 (IBM, Illinois, USA). Due to the questionable multivariate normal distribution of the investigated variables, we preferred non-parametric tests if applicable. Bivariate associations were analyzed using Spearman´s rank correlation (rs), whereas both mediation and moderation effects were analyzed using multiple regression analyses. The PROCESS macro for SPSS by Hayes [52] was used to determine direct, indirect, and conditional effects within the multiple mediation model. Statistical significance of estimated, respectively indirect effects was determined using the bootstrapping technique (n = 5´000 samples). Effects were interpreted as significant if the 95 % confidence intervals (95 % CI) did not contain the number zero. The significance level for all statistical tests was $\alpha = .05$. Classification of effect sizes referred to Cohen´s criteria [53].

RESULTS

Descriptive analyses

Mental health service usage and awareness

Nearly half (46.5%) of the 301 participants reported previous experience with face-to-face counselling, while more than one-fourth (26.9%) indicated having attended psychotherapy. Moreover, about half of the respondents (48.2%) indicated being aware of the existence of online counselling (not aware: 37.9%; not sure: 12.6%), whereas one-fourth (25.2%) reported being aware of the existence of online therapy, respectively Internet-based psychotherapy (not aware: 62.8%; not sure: 10.6%).

Preliminary and correlation analyses

As PROCESS uses ordinary least squares (OLS) regression to estimate effects, we checked if data complied with requirements of OLS prior to mediation analyses. Since the precondition of homoscedasticity was likely violated for each of the investigated variables, we applied a specific PROCESS command calculating heteroscedasticity-robust standards errors (SE). Means (*M*), standard deviations (*SD*) and results of Spearman rank correlations are presented in Table 1.

Table 1. Means, Standard Deviations and Spearman's Rank Correlation Coefficients.

Variables	*M*	*SD*	1	2	3	4	5	6	7
1. Attachment anxiety	3.49	0.96		.14*	-.24**	.34**	.15**	.08	-.08
2. Attachment avoidance	2.53	1.00			-.48**	.23**	.15**	-.08	-.21**
3. Perceived social support	20.91	3.59				-.27**	-.25**	-.01	.20**
4. Psychological distress	41.01	19.91					.15**	-.02	-.13*
5. Self-stigma	22.40	7.03						.05	-.38**
6. Online help-seeking intentions	3.95	1.85							.02
7. Face-to-face help-seeking intentions	4.36	1.77							

Note. $N = 301$. $^{*}p < .05$ $^{**}p < .01$

Data analyses showed that respondents indicated being more likely to attend face-to-face counselling (M = 4.36; SD = 0.77) than online counselling (M = 3.95; SD = 1.85) in case of future depressive mood. In addition, bivariate correlation analyses revealed significant negative associations between age and online help-seeking intentions (rs [301] = -.13, P < .05), while the correlation between age and face-to-face help-seeking intentions was found being insignificant (rs [301] = -.014, P = .80, NS). Correlation analyses further indicated a significant negative relationship between attachment avoidance and face-to-face help-seeking intentions (rs [301] = -.21, P < .01), signifying that persons reporting avoidant attachment patterns tended to be less willing to seek face-to-face counselling for mental health problems. Though, it should be noted that these correlations had small effect sizes [53].

Multiple mediation analysis

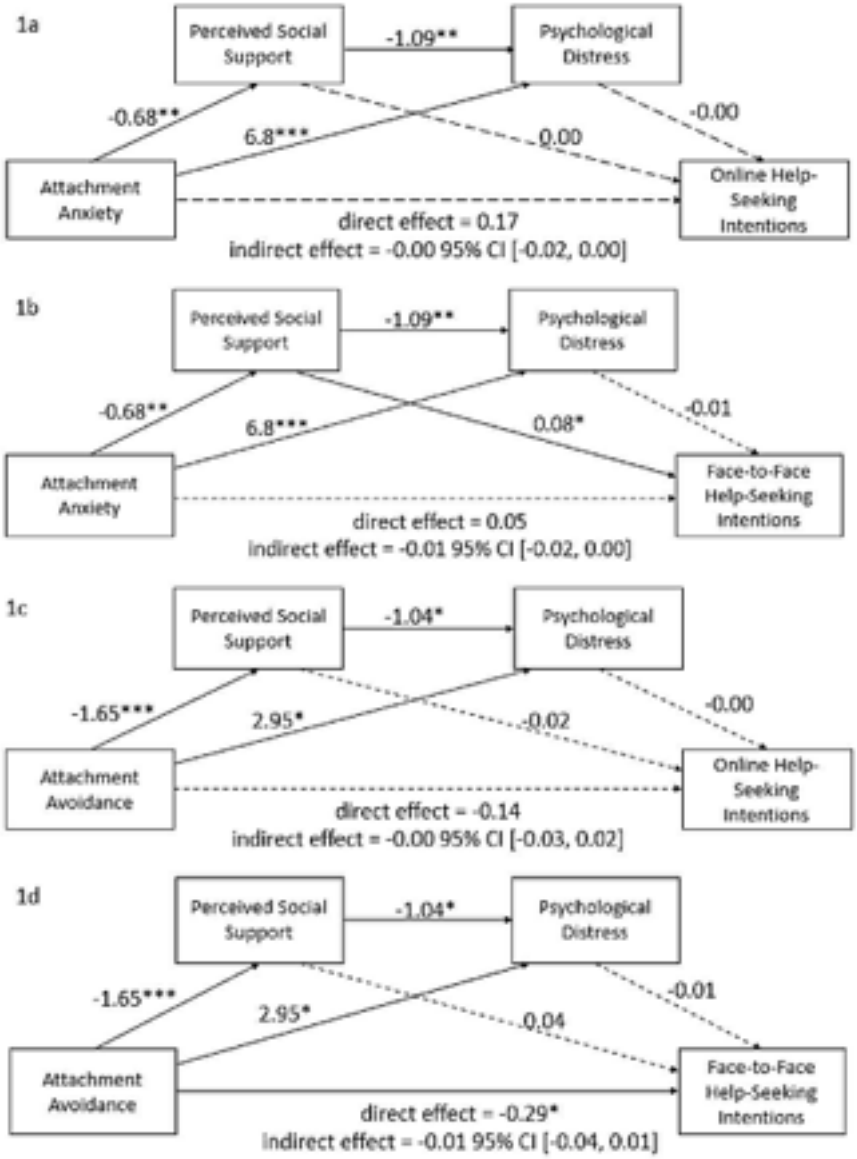
Main Hypothesis (1): The relationship between attachment quality and help-seeking intentions are mediated by both perceived social support and psychological distress.

Hypothesis 1a (attachment anxiety –> online counselling): As illustrated in Figure 1a, no significant positive association between attachment anxiety and online help-seeking intentions, mediated by perceived social support and psychological distress, has been identified. This result suggested no indirect effect as hypnotized about intentions to use online counselling. However, higher attachment anxiety was found being associated with lower perceived social support and higher psychological distress.

Hypothesis 1b (attachment anxiety –> face-to-face counselling): The assumed positive direct effect of attachment anxiety on face-to-face help-seeking intentions was not significant (Fig. 1b). Contrariwise, attachment anxiety was not positively, but negatively associated with help-seeking intentions: bootstrapping analyses revealed a negative indirect effect of attachment anxiety on face-to-face help-seeking intentions that was mediated by perceived social support, which in turn was linked to increased psychological distress, b = -.08 (95% CI -0.12 to -0.01).

Hypothesis 1c (attachment avoidance –> online counselling): As presented in Figure 1c, mediation analyses revealed that attachment avoidance was associated with both mediators, but not with online help-seeking intentions. In detail, results showed that the assumed negative direct connection between attachment avoidance and online help-seeking intentions was not significant. In addition, there was neither an indirect positive relationship between attachment avoidance and online help-seeking intentions nor were the assumed mediating effects of perceived social support and psychological distress significant. Hypothesis 1d (attachment avoidance –> fa-

Figure 1. Multiple Mediation Analyses: The relationship between attachment anxiety and online help-seeking intentions (Figure 1a), the relationship between attachment anxiety and face-to-face help-seeking intentions (Figure 1b), the relationship between attachment avoidance and online help-seeking intentions (Figure 1c), and the relationship between attachment avoidance and face-to-face help-seeking intentions (Figure 1d), all mediated by perceived social support and psychological distress. N = 301 respondents; *P < .05, **P < .01, ***P < .001. Unstandardized coefficients are reported. Dotted lines indicate non-significant coefficients, P > .05.



ce-to-face counselling): As presented in Figure 1d, mediation analyses indicated that the assumed relationship between attachment avoidance and face-to-face help-seeking intentions was not mediated by perceived social support or psychological distress. However, a significant negative direct effect of attachment avoidance on face-to-face help-seeking intentions suggested that avoidant individuals tended to feel unlikely to seek face-to-face counselling in case of mental health problems, b = -.29, t(297) = -2.61, P = .01 (95% CI -0.51 to -0.07).

Concerning the main hypotheses, it can be concluded that none of the assumed direct or indirect effects as proposed by hypotheses 1a, 1b and 1c yielded to significant results, whereas hypotheses 1d suggested a significant direct link between attachment avoidance and face-to-face help-seeking intentions for face-to-face counselling.

Moderation analyses

Secondary Hypothesis (2): Self-stigma moderates the relationship between attachment quality and help-seeking intentions.
Hypothesis 2a: As presented in Table 2, there was a significant main effect of self-stigma on face-to-face help-seeking, b = -.10, t(297) = -6.94, P < .001. This finding indicated that individuals scoring higher on self-stigma reported a lower readiness to seek face-to-face counselling. Additionally, regression analyses showed that the predictors (attachment anxiety, self-stigma and the interaction of both) explained 15 percent of variance in face-to-face help-seeking intentions, R2 = .15, F(3, 297) = 17.59, P < .001. Though, there was no significant direct effect of attachment anxiety on face-to-face help-seeking intentions, nor was the proposed interaction with self-stigma significant.

Table 2. Linear models of predictors of face-to-face and online help-seeking intentions.

Variables	*b*	*SE*	*t*	*p*
Linear Model 1: Predictors of face-to-face help-seeking intentions				
Constant	4.34 [4.15, 4.53]	0.10	45.31	$p < .001$
Self-stigma (centered)	-.10 [-.012, -0.07]	0.01	-6.94	$p < .001$
Attachment anxiety (centered)	-.03 [-0.19, 0.25]	0.11	.25	$p = .80$
Self-stigma x attachment anxiety	0.02 [-0.02, 0.05]	0.02	.88	$p = .38$
Linear Model 2: Predictors of online help-seeking intentions				
Constant	3.96 [3.75, 4.18]	0.11	36.25	$p < .001$
Self-stigma (centered)	0.02 [-0.02, 0.05]	0.02	1.01	$p = .31$
Attachment avoidance (centered)	-0.12 [-0.35, 0.11]	0.12	-1.02	$p = .31$
Self-stigma x attachment avoidance	-0.01 [-0.04, 0.02]	0.02	-0.80	$p = .42$

Note. N = 301. Unstandardized coefficients are reported. Model 1: $R^2 = .15$, $F(3, 297) = 17.70$, $p < .001$. Model 2: $R^2 = .01$, $F(3, 297) = 0.77$, $p = .51$.

Hypothesis 2b: As presented in Table 2, the assumed moderating effects of self-stigma on the negative relationship between attachment avoidance and online help-seeking intentions were not significant. Neither the overall model, nor main effects nor the proposed interaction effects yielded to significant results. Overall, one percent of variance in online help-seeking intentions was explained via this model, R2 = .01, F(3, 297) = 0.77, P = .51, NS. To conclude, relationships between attachment anxiety and face-to-face help-seeking intents and attachment avoidance and online help-seeking intents were not moderated by self-stigma.

Additional post-hoc mediation analyses

Based on the insignificant moderation effects of self-stigma, we conducted additional mediation analyses with self-stigma as potential mediator. Mediation analyses demonstrated that self-stigma indeed mediated the relationship between insecure attachment and face-to-face help-seeking intentions; attachment anxiety: b = -.09 (95 % CI -0.19 to -0.01); attachment avoidance: b = -.11 (95 % CI -0.22 to -0.03). However, only the direct effect of attachment avoidance on face-to-face help-seeking intents was significant, b = -.28, t(297) = -2.98, P < .001. In contrast, no significant effects of the predictor attachment

style or the mediator self-stigma on online help-seeking intentions have been identified. To conclude, individuals who scored higher on self-stigma reported being less likely to use face-to-face counselling in case of depressive mood, whereas self-stigma has not affected the (hypothetical) willingness to use online counselling in this sample.

DISCUSSION

The purpose of the present online survey was to examine perceived social support and psychological distress as mediators and self-stigma as moderator in the relationship between attachment quality and both face-to-face and online help-seeking intentions among adults.

Summary of key findings

In summary, study findings indicated that insecure attachment was significantly associated with lower perceived social support and both higher psychological distress and self-stigma of seeking help.

Willingness to seek face-to-face counselling

Corresponding to earlier research [25, 42], our study findings suggested a link between attachment insecurity and psychosocial barriers that can inhibit the willingness to seek counselling in case of future mental health problems. Also consistent with previous research [11, 25], the present survey confirmed the assumed association between higher attachment avoidance and lower intentions to seek face-to-face counselling. Recalling the theoretical framework on adult attachment, this finding can be embedded in categorical concepts of (a) the avoidant-dismissive prototype [36] and (b) the fearful-avoidant (disorganized) prototype, which both are assumed to share the negative cognitive 'model of others' [39] and to be less willing to seek professional help in comparison to secure and anxious-preoccupied attachment styles [37, 38, 54]. In contrast to the mediation hypothesis, though, psychological distress was found being clearly related to the respondents´ readiness to seek face-to-face counselling. As hypothesized, the significant indirect effect of attachment anxiety on face-to-face help-seeking intentions indicated that higher attachment anxiety was associated with less perceived social support. However, differing from studies in context face-to-face help seeking [11, 25], our results revealed attachment anxiety correlated with reduced (not increased) intentions to seek face-to-face counselling. Even so, it should be considered that this non-clinical pilot study focused on potential facilitators and barriers of help-seeking intentions in the absence of actual need. Potential reasons for the statistically insignificant role of psychological distress was not found in this survey, though, seem to be at least partly consistent with the research literature. For instance, two meta-analyses [8, 55] have also failed endorsing coherent, respectively significant correlations between levels of perceived stress and help-seeking outcomes among college students. Concerning that our publicly accessible online survey included a high percentage of college/university students, too, common features of sample and data collection should be considered as potential sources of bias in surveys. Furthermore, subjective appraisals about the ratio between benefits and risks of counselling may have affected by insecure attachment IWMs: For instance, Shaffer and colleagues [11] confirmed that higher attachment anxiety correlated with increased help-seeking intentions among undergraduates, in case of outweigh of perceived advantages. Equally, higher attachment avoidance was found being associated with less help-seeking intents and that this link was mediated by lower supposed benefits of counselling [11]. Furthermore, the supposed overall 'normal' mental health state in this sample indicated low actual requirements for professional help, which in turn may have predisposed attitudes towards counselling. Thus, the role of perceived cost-benefit ratio in seeking public health services requires further clarification.

Willingness to seek online counselling

Considering ongoing initiatives and public health campaigns supporting e-mental health dissemination [13], we expected significant associations between attachment quality and the readiness to seek online counselling as low-threshold service. Unexpectedly, we identified no substantial impact of attachment dimensions on the willingness to seek online counselling in case of future mental health issues. Accordingly, the assumed mediating effects of perceived social support and psychological distress on online help-seeking intentions were found being statistically insignificant. This unexpected finding could be resulted from the low public 'e-awareness' in Germany [14] and the moderate involvement with e-mental health in the present sample: about half of participants indicated being aware of the existence of online counselling, although the sample consisted of a high number of distance-learning students from an undergraduate psychology program. Likewise complying with earlier research [9, 13, 14], we identified a slightly higher willingness to future use face-to-face over online counselling. Unlike initially hypothesized, we have not identified moderating effects of self-stigma on the negative relationship between attachment avoidance and online help-seeking intentions. However, additional analyses confirmed self-stigma as mediator in the relationship between attachment and the willingness to seek face-to-face counseling. Hence, these findings confirmed self-stigma´s function as barrier to access face-to-face counselling, but not online counselling. In contrast, an online survey [9] revealed that respondents scoring higher on self-stigma preferred using e-mental health over traditional face-to-face services. Opposing to the survey by Klein and Cook [9], we have found no association between self-stigma and online help-seeking intentions. However, we did not distinct 'e-preference' by grouping conditions. To better understand intentions to seek online counselling, investigating mediating effects of self-stigma, which were earlier confirmed in the connection between mental health literacy and informal help seeking [56], might be a promising next step for future studies. Other areas of interest include the question on how to improve effectiveness of online counselling, for instance, by reducing self-stigma of seeking help or mental illness [57, 58]. Still, an important obstacle remains: most studies tend to measure the construct 'self-stigma of mental disorders', which is a different construct than 'self-stigma of help seeking' used in this survey [59].

Considering the indefinite role of public 'e-acceptability', 'e-awareness' and 'e-attitudes' [13], future studies could apply the Unified Theory of Acceptance and Use of Technology (UTAUT) [60] to identify behavioral intentions to future use online counselling. For this purpose, the strongest UTAUT-predictor for usage intentions and use of modern technologies called 'performance expectancy' [60] could be further investigated as key determinant of e-mental health acceptance, e.g. with focus on perceived benefits of counselling [11]. Given the outlined uncertainty surrounding psychological predictors, facilitators and barriers to access e-mental health services, such as e-health literacy [56], both surveys on public views and randomized controlled trials (RCTs) on the impact of health information are required to derive definitive conclusions.

Implications for future research

Regarding the validity of the survey, it should be considered that this pilot study involved specific, respectively selective sample characteristics. Recruiting respondents mainly via online platforms and a virtual university setting could have affected survey outcomes. For instance, we found relatively low self-stigma of help seeking in comparison to more diverse samples [50]. However, this study focused on public attitudes towards counselling from the perspective of health psychology. That is why we did not ask for detailed information about present or past mental health issues. This may have hampered conclusions on the impact of stigma of seeking help in other contexts. Concerning the identification of differentiated demands in healthcare, fur-

ther research is required to close knowledge gaps regarding psychological determinants of online self-help activities. For this purpose, future studies could investigate both clinical variables (e.g. type of mental disorder and/or comorbid illness) [61] and service type-specific preferences based on sociodemographic variables (e.g. gender and age) [62] as moderators of the willingness to use online versus face-to-face counselling. In previous studies, the predictive value of adult attachment ('model of others') on the formation of help-seeking intentions have been identified for female, but not male participants [58]. Due to scope of the present study and the over-representation of female respondents in our sample (72%), we have not explored gender differences. Although a large Australian survey has confirmed a higher willingness among middle-aged females to participate in e-mental health interventions [57], our findings have not indicated a remarkable assembly of unbalanced gender ratio and increased readiness to seek counselling. Regarding age differences, our findings showed that younger age was associated with improved online help-seeking intentions, albeit with small effect size according to Cohen´s criteria [53]. In the research literature, associations between age and help-seeking intentions in the public were found being inconsistent, depending on study design. While some non-randomized, respectively 'open access' online surveys [9, 13] have found no socio-demographic differences in public attitudes towards e-mental health, other (large-scale) surveys identified both positive [57] and negative correlations [14] between age and the willingness to use e-mental health services. Furthermore, both the overall rare experience with online counselling and moderate 'e-awareness' might have biased survey findings towards rather neutral, respectively heuristic assessments. Finally, the adaptation of the UTAUT-framework [63] to studies on the public e-mental health uptake could be a next step to inform methodology and comparability across different settings for technology acceptance studies.

Limitations

This pilot survey includes several limitations. As key methodological issue, it should be considered that help-seeking intentions were assessed via a case vignette [51]. Although the case vignette concerned preferred counselling services in case of depressive mood, respondents were asked to make their choice in the absence of mental illness (likelihood of future use). In addition, using brief descriptions of mild symptoms in subclinical depression could have limited the validity of the GHSQ measure or shifted respondents' attention from the focus on the two counselling services to unimportant aspects (e.g. thinking about symptoms). In addition, it can be argued that using 'distress' as problem (instead of depressive mood) would have been sufficient to help imagine a state requiring support, rather than providing a list of depressive symptoms in the absence of such an issue. Though the connection between distress and depressive symptoms has been confirmed in previous studies [64], it may have been not the best choice to combine these aspects in an 'open access' online survey. In addition, it can be assumed that the narrowed scope of the two fictional counselling scenarios has restricted external validity of the GHSQ case vignette. However, the decision to describe a specific problem aiming to inform comparability of ratings was based on pre-tests and previous research (e.g. [14]; case vignette for phobia). Furthermore, due to the health psychology scope of our study we did not assess depressive mood or used clinical measures and relied on self-reports. In addition, the overweight of secure attachment, leading to small variance could have reduced the precision of ECR-S [33, 34], respectively raised issues in terms of poor Cronbach´s identified for the ECR-S [47]. Moreover, self-stigma was found being in average low in this sample, which could have hampered moderation effects. Additionally, results were likely affected by selection bias considering the online data collection, which is widely used in e-mental health research [65]. However, despite the high amount of psychology students/distance learning stu-

dents (43%) in this sample, online counseling was known to only half of study respondents (moderate 'e-awareness'). As another limitation, we did ask for Internet-related experience and usage behavior in order to determine differences in the awareness of online counselling, differentiated by age groups ('digital natives' versus 'digital immigrants'). Other studies on public intentions to use e-mental health indicated improved attitudes towards online counselling in younger adults [14]. Poor involvement with online self-help may have inclined preference ratings, since the UTAUT-framework [63, 66] proposed user experience and habits as well as facilitating factors as important predictors of intentions to use technology. Finally, this study used a quasi-experimental design to test hypotheses of multiple mediation models. Since this study design is unlike RCTs ineligible to examine causal relationships, terms like 'effect' were not meant literally.

Conclusions and outlook

Overall, both significant and insignificant results obtained in this pilot study can contribute to the empirical literature on associations between adult attachment, self-stigma and preferred mental health services with respect to help seeking. However, the unclear role of these predictors in the willingness to seek online counselling also raised vital questions. Taken together, there were two noteworthy findings. First, individuals with higher attachment avoidance indicated being unlikely to seek face-to-face counselling, but tended to express neutral views towards online counselling. Second, individuals scoring higher on self-stigma of seeking help also appeared to be unlikely to seek face-to-face counselling, which was not the case for online counselling. In other words, these results suggested that online and face-to-face help-seeking intentions might be affected by different aspects, which can be an important suggestion considering the internationally low impact of the intended large-scale dissemination of e-mental health programs [12] aiming to improve the access to professional help for hard-to-reach populations and, by this means, overcoming persisting barriers to care. Concerning the mostly insignificant findings of mediation analyses, a possible explanation is the fact that about half of the sample indicated being unfamiliar with online counselling. To take advantage of the potentials of online counseling, future research should identify predictors of online help-seeking intentions and strengthen the public´s e-awareness [20]. Over the past two decades, the evidence based on the effectiveness of e-mental health in the prevention [2] and treatment of mental health problems [67] has rapidly grown. Despite steady advances in e-mental health research, experience with and awareness of online self-help treatments is still trivial in most countries [13, 14, 68]. Furthermore, e-mental health is a relatively novel action field, and thus longitudinal research is needed to assess if the large-scale accessibility to mental healthcare services can be improved for diverse populations via the Internet [69]. In addition, there is a need for participatory person-based approaches using mixed methods in order to gain an in-depth understanding of users´ needs [70]. Nonetheless, self-stigma can be a barrier for individuals with emotional problems to receive help [7, 9, 71–73]. Thus, identifying psychological barriers resulting in the avoidance of help seeking in terms of psychosocial counselling [74] and enhancing e-mental health literacy might be the first step to improve the uptake of innovative approaches in mental healthcare and help reducing social and self-stigma of mental illness [56].

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ORIGINAL ARTICLE IN PUBLIC HEALTH

Prevalence of alcohol and drug consumption and knowledge of drug/alcohol-related sexual assaults among Italian adolescents

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Abstract

Introduction: Alcohol is the most widely used substance among adolescents, exceeding the use of tobacco and illicit drugs. The study aims at investigating the prevalence of alcohol and drug use and prevalence and knowledge of Drug Facilitated Sexual Assault (DFSA) among Italian adolescents.
Methods: The study population was a sample of 512 students of secondary education (high school) from 3 public schools in Milan, Italy. Two hundred and fourty-nine boys and 263 girls aged 15 to 21 years old (M = 16.2, *SD* = 2.1) answered a specially structured anonymous questionnaire.
Results: Recent problem drinking ('every day' or 'once a week') was reported from 9% ('wine') up to 28% ('beer') of students. Cannabis and rave drugs usage (ranged from 'every day' to 'once only in a while') were reported by up to 38% ('cannabis') and 2% ('rave drugs') of students. Beer was the most popular type of alcoholic beverage (81%) with respect to wine (62%) and hard liquor (66%). Only a small percentage of participants stated that they were informed about the possible addiction to alcohol (5%) and its negative social consequences (3%). Nevertheless, almost all the students (92%) declared that alcohol consumption was less dangerous than other psychoactive substances. Finally, most students stated to know DFSA phenomenon (77%) and were victims or witness (13%) of a DFSA event.
Conclusion: Psychoactive substances consumption remains a serious problem among Italian adolescents. For a successful alcohol strategy there is a need to implement preventive measures and counseling approaches in school. Increasing the knowledge of the negative effects of alcohol/drugs use might also lead to a better prevention of the DFSA phenomenon.

KEY WORDS: drug abuse; alcohol drinking in college; cannabis; sex offenses; adolescent.

Riassunto

Introduzione: L'alcol è la sostanza più diffusamente utilizzata tra gli adolescenti, eccedente l'uso del tabacco e delle droghe. L'obiettivo di questo studio è stato quello di studiare la prevalenza dell'uso di alcol e di droghe leggere ed il grado di conoscenza del fenomeno definito "Assalto Sessuale Facilitato dall'uso di droghe" tra gli adolescenti Italiani.
Metodi: La popolazione studiata era composta da un campione di 512 studenti di scuola secondaria superiore proveniente da 3 scuole di Milano, in Italia. 249 ragazzi e 263 ragazze di età compresa tra i 15 ed i 21 anni (M = 16.2, SD = 2.1) ha risposto ad un questionario anonimo.
Risultati: Sono stati riferiti problemi recenti collegati al bere ("ogni giorno" o "una volta alla settimana") dal 9% ("vino") fino al 28% ("birra") degli studenti. La cannabis e l'uso di droghe da sballo (da "ogni giorno" a "una volta ogni tanto") è stata riportato fino al 38% ("cannabis") e fino al 2% ("droghe da sballo") degli studenti. La birra è stata il tipo di bevanda alcolica più utilizzata (81%) rispetto al vino (62%) ed ai liquori (66%). Solo una piccola percentuale dei partecipanti ha dichiarato di essere stato informato sulla possibile dipendenza determinata dall'alcol (5%) e sulle conseguenze negative a livello sociale derivanti dal suo uso (3%). Quasi tutti gli studenti (92%) hanno dichiarato che il consumo di alcol era meno pericoloso di quello di altre sostanze psicoattive. Infine, molti studenti hanno dichiarato di conoscere il fenomeno definito "Assalto sessuale facilitato dall'uso di sostanze" (77%) e di essere state vittime o testimoni (13%) di un evento di questo tipo.
Conclusione: Il consumo di sostanze psicoattive rimane un serio problema tra gli adolescenti Italiani. Per una strategia efficace contro l'alcol è necessario implementare le misure di prevenzione e gli approcci di counselling nelle scuole. Aumentare la conoscenza degli effetti negative derivanti dall'uso di alcol e droghe potrebbe anche portare ad una più efficace prevenzione del fenomeno dell' "Assalto sessuale facilitato dall'uso di sostanze psicoattive".

TAKE-HOME MESSAGE

Psychoactive substances consumption remains a serious problem among Italian adolescents. Policy makers should implement preventive measures and counseling approaches in school. Increasing the knowledge of the negative effects of alcohol/drugs use might also lead to a better prevention of the 'Drugs-Facilitated Sexual Assault' phenomenon.

Competing interests - none declared.

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INTRODUCTION

According to the World Health Organization (WHO), the European Region has the highest levels of alcohol consumption per capita in the world [1]. Alcohol is the most widely used substance among adolescents, exceeding the use of tobacco and illicit drugs. Alcohol consumption is associated with many health risks and social problems [2–4]. In Italy, according to the European School Survey Project on Alcohol and Other Drugs (ESPAD) [5] alcohol beverage consumption and Heavy episodic drinking (HED) among adolescents are aligned with the ESPAD's average [6]. In addition, the rapid growth in cannabis abuse since the 1960s in North America, Western Europe and Australia led to about 147 million (2.5% of world population) cannabis users in the world [7]. Therefore, in most industrialized countries the use of illegal psychoactive substances begins during adolescence presenting a serious public health challenge [8]. In Italy, Molinaro et al. studied the trend of the illegals substance use among Italian high school students over 11 years (1999–2009). This study shows that illicit drug use is a widespread and probably expanding epidemic among Italian high school students, with cannabis at least five times more prevalent than any other drug [9]. Moreover, alcohol consumption and interpersonal violence are strongly linked, further challenging public health. Interpersonal violence can be classified into five categories: youth violence, child abuse, intimate partner violence, abuse of elderly people and sexual violence. Sexual violence include sexual assault, unwanted sexual attention and sexual coercion [10]. Drug Facilitated Sexual Assault (DFSA) has been defined as an offence in which victims are subjected to non-consensual sexual acts, while they are incapacitated or unconscious due to the effects of alcohol and/or drugs [11, 12]. In different studies, many different substances were associated with this crime, but in a recent review, Hall and Moore have identified alcohol and marijuana as the drugs most frequently implicated in substance-assisted sexual assault [13]. According to an European report on the DFSA phenomenon, in Europe and elsewhere, alcohol is the psychoactive substance most commonly linked with sexual abuse and assault [14, 15]. Age, gender and drinking patterns are important factors for the risk of alcohol-related sexual abuse. This risk is highest among young people [10]. Campus sexual assault is a widespread problem and estimates of sexual assaults of college women have been remarkably consistent over time [16, 17]. Previous research based on university students has documented a strong relationship between alcohol and sexual assault. To date, however, there has been limited study on the association between alcohol and sexual assault among adolescents [18]. Data on DFSA in Italy is lacking, being there no study about the prevalence of alcohol facilitated sexual assault among Italian adolescents, to the best of our knowledge. The purpose of this study is to determine the prevalence of both cannabis and alcohol assumption, and the prevalence and knowledge of DFSA among Italian adolescents.

MATERIALS AND METHODS

A descriptive study was carried out in October 2015. Self-administered, anonymous surveys were conducted with a representative sample of 512 students aged 15–21 years at three senior schools in Milan. A questionnaire ad hoc was drawn up to assess knowledge and perceptions of alcohol and generic drugs. The questionnaire was divided into three parts: a) personal and parents' data, b) knowledge about alcohol and generic drugs, prior experience with them and c) knowledge of drugs facilitated sexual assault. Data concerning demographics and living conditions were collected using anonymous questionnaires (this questionnaire was designed specifically for the study, but its items were derived from the international literature [19, 20]). Adolescents were only asked about their direct or indirect experience of alcohol and/or drugs facilitated sexual assaults. Questionnaires were distributed to the students of three high schools in Milan. All students in the random selected classrooms were asked to complete, during a regular class period (approximately 20 min), a

self-administered questionnaire that was voluntary and anonymous. Students selected for the survey were informed about the objectives of the study, and had the right to refuse to participate without any consequences. A total of 512 subjects involved in this study returned a completed questionnaire.

RESULTS

The sample consisted of 512 respondents, of whom 48,6% were male (*n* = 249) and 51,4 % (*n* = 263) were female. The mean age of the participants was 16.8 years (*SD* 2.1, range 15–21). A significant proportion of students were <18 years age (73.4%, *n* = 376) and attended the third year of the school. Parents of the participants were married/living with a partner (86.9%, *n* = 445) or divorced/separated (13.1%, *n* = 67). A little proportion of students (8.4%) declared parents' socioeconomic status as 'not good'. In Table 1 we show the prevalence estimated for problematic alcohol and drugs use during the last year. The frequency of alcohol assumption among participants was 'every day' or 'once a week' in a large percentage of the sample (53.1%). Recent problem drinking ('every day' or 'once a week') was reported from 12% ('wine') to until up 25% ('beer') of students < 18 years old. Beer was the most popular type of alcoholic beverage (81.4%) versus wine (61.7%) and hard liquor (65.6%). Cannabis and rave drugs usage (ranged from 'every day' to 'only once in a while') were reported by to up 38% ('cannabis') and 2% ('rave drugs') of students. Moreover, students declared to be regular ('weekly' or 'daily' usage) smokers of cigarettes (35.0%) and cannabis (14.3%). During the last year, the cannabis usage was 'once in a while' in a large percentage of cases (38.7%). Only a small percentage of participants stated that they were informed about the possible addiction to alcohol (4.5%) and its negative social consequences (2.7%). A large percentage of the students (92.0%) believed that alcohol consumption was less dangerous than other psychoactive substances. In addition, most students declared to know the DFSA phenomenon (77.3%) and were victims or witness (12.7%) of a DFSA event. Finally, most students were aware of the negative effects of alcohol and drugs (89.9%) in different contexts: through their friends (40.2%), teachers (22.3%), internet (20.9%), their parents or other contexts (16.7%).

Table 1. Prevalence of alcohol and psychoactive drugs intake assumption in the last year.

Respondents (n = 512)	**Every day**	**Once a week**	**Once a month**	**A few times a year**	**Only once in a while**	**Never**
Beer (*n.*) (%)	10 (1.9)	135 (26.4)	84 (16.4)	149 (29.1)	39 (7.6)	95 (18.6)
Wine (*n.*) (%)	9 (1.8)	40 (7.8)	56 (10.9)	152 (29.7)	59 (11.5)	196 (38.3)
Hard liquor (*n.*) (%)	1 (0.2)	77 (15.0)	91 (17.8)	141 (27.5)	26 (5.1)	176 (34.4)
Smoking cigarettes (*n.*) (%)	138 (27.0)	41 (8.0)	10 (2.0)	41 (8.0)	45 (8.8)	237 (46.2)
Cannabis usage (*n.*) (%)	23 (4.5)	50 (9.8)	35 (6.8)	54 (10.5)	36 (7.0)	314 (61.4)
Rave drugs usage (*n.*) (%)	2 (0.4)	3 (0.6)	2 (0.4)	4 (0.8)	2 (0.4)	499 (97.4)

DISCUSSION AND CONCLUSION

In this study, our findings show that alcohol consumption and drugs usage were slightly prevalent in younger students. Table 1 shows the prevalence of alcohol and drugs use with respect to the frequency of intakes. Globally, problem drinking ('every day' or 'once a week') was reported from 9.6% ('wine') up to 28% ('beer') of students. Cannabis and recreational drugs usage (ranged from 'every day' to 'only a while') were reported by up to 38% ('cannabis') and 2% ('rave drugs') of students. Nevertheless, even though students from our sample commonly use both alcohol and drugs, especially cannabis, they have very limited insight on the negative physical, mental and social effects of the psychoactive substances. Considerable research among students in Europe and elsewhere is consistent with our findings of higher amount of problem drinking among male students compared to their female peers. Moreover, in senior high school students reported a higher frequency and quantity of consumption. According to WHO [1, 10], harmful use of alcohol is the leading risk factor for death in males aged 15–59 years, yet there is evidence that women may be more vulnerable to alcohol-related harm from a given level of alcohol use or a particular drinking pattern. Historically, women have consumed alcohol less often and in lower amounts than men. However, over time, the changing social role of women and the lessening of social taboos have led to a rise in the frequency and level of alcohol consumption among women. The significance of binge drinking among European young women is increasing [21]. Results from national surveys of adolescents and young adults show that alcohol use is common among both young men and women. Data from the Monitoring the Future Survey show that the gender gap is closing [22]. Alcohol use is the primary contributor to the leading causes of adolescent death (ie, motor-vehicle crashes, homicide, and suicide) in the United States [23]. Alcohol misuse disorders in adolescents are a risk factor for suicide attempts [24] and are associated with the following psychiatric conditions: mood disorders, particularly depression; anxiety disorders; attention-deficit/hyperactivity disorder (ADHD); conduct disorders; bulimia; and schizophrenia [25]. Alcohol misuse is also associated with physical health problems including hormonal disorders, sleep disturbance and dental and other oral abnormalities [26]. Moreover, it is more difficult for young people than adults to cope with the effects of alcohol, physically and emotionally. Therefore, drinking can have a negative effect on a young person's school work, social life and personal relationships, as well as their general health [27]. In Italy, men drink on average twice as much as women do; women are more occasional consumers than men (2007), even though the gap between males and females is lower in adolescents (2011) [28]. According to the studies carried out by the Osservatorio Permanente sui Giovani e l'Alcool over the years, the rates of both regular and occasional consumers (in 2011) among 13–24 years old were 70% in males and 64% in females. The rate of alcohol consumption is particularly low among preadolescents (13–15 years old), only the 39% being drinkers. Nevertheless, the prevalence of young drinkers rises up to 70% in > 16 years old age. Moreover, the rates of regular assumption are 9.5% for 13–15 years old children, and 49.3% for 16–19 years old adolescents [27]. According to the WHO's report [1, 10], the European Region has the highest proportion of both current and heavy drinkers among adolescents. Regarding gender, there are more 'current drinkers' among male adolescents than among female adolescents, in all WHO regions. Moreover, there are about three times more young males than females who engage in HED. According to a recent survey, 14% of 15 and 16 years old in the United Kingdom have been drunk 20 times or more during the last 12 months and 50% have been drunk at least twice [29]. Moreover, our study is consistent with an Italian study on alcohol consumption among high schools students from 10 Italian towns, showing that alcohol usage was greater among males than females and among 13th graders (aged 18–

19) with respect to 9th graders (aged 14–15) [30]. In addition, our findings are consistent with national and European statistics emphasizing beer as the preferred and most widespread alcoholic beverage among 16-20 year-old Italian adolescents [6, 31]. Indeed, in our research, most respondents preferred ('every day' or 'once a week') beer over wine (28.1% vs 9.6%), even if wine drinking is deeply rooted in the Italian culture and is taking place among young drinkers [32]. With regard to cannabis usage, our data are in agreement with previous studies showing the large prevalence of adolescent drug use in Europe [33] and in Italy [9] with greater vulnerability of boys compared to girls [9, 34]. Cannabis is commonly regarded as an innocuous drug and lifetime and regular use have increased in most developed countries. Additionally, cannabis is the most commonly used illicit substance among adolescents and young adults. Initiation into cannabis use typically begins in adolescence, as youths aged 12–17 constitute about two thirds of the new cannabis users [35]. Approximately, 14% of adolescent-onset cannabis users develops cannabis dependence, a rate roughly twice that reported for adult-onset user [36]. In a recent review of the literature on the cannabis consumption among adolescents, Rubino and Parolaro have highlighted that heavy cannabis consumption in adolescence may induce subtle changes in the adult brain circuits resulting in altered emotional and cognitive performance. In vulnerable individuals, pubertal cannabinoid administration may even act as a risk factor for (inducing) enhanced behavioural disturbances related to schizophrenia. Moreover, in a specific 'time window' like the adolescence, cannabis use might ultimately lead to enhanced vulnerability in some individuals for the use of more harmful drugs of abuse [37]. In our study, almost all adolescents were unaware of the mental, physical and social effects of the psychoactive substances. With regards to drugs-facilitated sexual assault, in our study most students (77.3%) recognized a linking between alcohol and/or drugs and the DFSA phenomenon, while 12,7% was a victim or a witness of a DFSA event. Alcohol-facilitated sexual assault occurs when alcohol is used to alter an individual's ability to consent to sexual activity. The most frequently detected drug in victims of drug-facilitated sexual assault is alcohol. Adolescence is a high-risk period for sexual assault; about one third of rape victims in the United States reports rape during this stage of human development [38]. The National Crime Victim Survey (2000) noted that female adolescents aged 16-19 are four times more likely than the general population to report sexual assault, rape, and attempted rape [39]. Generally, approximately half of all sexual assaults are associated with either the perpetrator's alcohol consumption, the victim's alcohol consumption, or both [40]. However, research on adolescent acquaintance assault (i.e., involving physical contact) is scarce [18]. The few studies based on sexual assault victims seeking treatment suggest that alcohol use among victims or perpetrators occurs in approximately half of all cases of sexual assault among adolescent victims [41, 42]. A study found that 15–23% of assault cases involved the victim being drugged or drunk, with an increase in percentage for older adolescents [43]. In a national sample of 1.763 adolescent girls McCauley et al. found that 11.8% of girls experienced at least one form of sexual assault and 2.1% experienced incapacitated/drug-alcohol facilitated sexual assault [38]. Sexual assault in adolescents is associated with increased risk of post-traumatic stress disorder, major depression, and substance use/abuse disorders [38, 44].

Strenghts and Limitations

Our study presents some limits. First, as in most observational studies, all data were obtained through self-reports, therefore inaccurate recall or under-reporting may affect our results. Second, students with poor school attendance were likely underrepresented in this sample, because the administration of the survey took place during school hours. Third, the study was carried out only in one city in Italy; therefore, the results cannot represent

the entire country's adolescent drinking prevalence and patterns. With regards to DFSA, the number of questions about sexual assault in the study was limited. As in the research of McCauley et al. [38], we were able to ask younger adolescents only about other unknown forms of sexual assault instead of asking explicitly about oral sex or sexual intercourse. With regards to alcohol and drugs consumption, a limitation of this study concerned the educational variable. According to different studies, there is an inverse relationship between parental involvement in the children's education and adolescents' probability alcohol consumption [45, 46]. In the same way, our study lacks of an in-depth analysis on the relationships between perceived income insufficiency, parents' status, school characteristics, cigarettes smoking [30] and alcohol/drugs usage and knowledge of DFSA among participants [13, 18]. Future research should attempt to address these limits. Despite these limits, the results of our study have some implications for drugs and alcohol abuse among Italian adolescents, as this study is the first on the prevalence and knowledge of DFSA conducted among adolescents in Italy, to the best of our knowledge.

Implications for research

Alcohol consumption remains a serious problem among Italian adolescents. According to the Italian legal framework on alcohol (Law *n*. 151/2001), children and adolescents must be protected from the consequences of alcoholic beverages abuse. Moreover, according to the 1st Italian National Alcohol and Health Plan (2007-2009), it is necessary to protect children and young people from pressures to drink and to reduce the share of consumers among children under 18. Therefore, the recent Italian Law *n*.189/2012 provides the ban to sell alcohol to < 18 years old age. A WHO Resolution, established that 'by the year 2015 in all countries per capita alcohol consumption should not increase or exceed 6 litres per annum, and should be close to zero under 15-year-old'. From the studies reviewed, alcohol marketing (media exposure and commercial communications) increases the likelihood that adolescents will start to use alcohol and to drink more if they are already using alcohol [47]. Therefore, policy makers should address this issue promptly. Nevertheless (in our opinion) law measures are not sufficient (indeed, media messages about cigarettes and cannabis smoking are often contradictory) [48, 49]. For this reason, prevention measures and counseling approaches in school are needed in order to implement a successful alcohol strategy. Therefore, intervention programmes in the media, in families and in schools, should primarily encourage moderate alcohol use and focus on the physical, mental and social risks related to alcohol abuse. Further prevention programmes should take into consideration age and gender differences [50]. Our results show that specific public health programmes in Italian schools might improve the knowledge of negative effects of smoking and alcohol/drugs usage among young people. An increase in the awareness on the consequences of alcohol and drugs consumption might also lead to a better prevention of the DFSA phenomenon.

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ORIGINAL ARTICLE IN GERIATRIC MEDICINE

Prevalence of disability in Iranian older adults in Tehran, Iran: A population-based study

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Abstract

Introduction: The increase in the prevalence of disability has serious consequences for elders, their families, and the society in general. The effects of disability on an aging population's health and welfare are important issues in gerontological research. The aim of the present study was to investigate the prevalence of disability in the community-dwelling older adults living in Tehran, Iran.
Methods: In this large population-based cross-sectional study (Urban HEART-2), 15,069 individuals aged ≥ 60 years were selected randomly based on a multistage, cluster sampling in Tehran, Iran, in 2011. All participants were interviewed by trained personnel by means of a standardized questionnaire which asked about prevalence of disability, disability type and socio-demographic variables. The data were analyzed using descriptive statistics and Chi-square test.
Results: Of the total study population, 54.8% (*n* = 8,264) were males. The participants' mean age was 68.93 years (*SD* = 7.27) and the participants' mean of Body Mass Index (BMI) was 26.21 kg/m2 (*SD* = 4.40). Based on the results, the overall prevalence of disability was 11%. 'Hearing Loss' (68.3%) and 'Hearing Impairment' (10.4%) were the most prevalent types of disability that occurred in our sample. The majority of the participants were using services of private rehabilitation centers. There were statistically significant differences in terms of age, BMI, and educational background between the group of individuals who reported one or more types of disability and the group of individuals reporting none.
Conclusion: For older adults, disability directly affects daily functioning by restricting physical and social activities, the ability to maintain self-sufficiency, and ultimately the freedom to live a chosen lifestyle. Prevention strategies should focus on reducing the incidence of chronic disease and improving socioeconomic status of older adults.

KEY WORDS: epidemiology; disability evaluation; frail older adults; geriatrics; Urban HEART; Iran.

Riassunto

Introduzione: Un aumento di prevalenza della disabilità ha serie conseguenze per gli anziani, le loro famiglie e la società in generale. Gli effetti della disabilità sulla salute della popolazione anziana e sul wellfare sono problemi importanti nella ricerca gerontologica. L'obiettivo del presente studio è stato quello di studiare la prevalenza della disabilità negli anziani che risiedono nelle comunità di Teheran, in Iran.
Metodi: In questo studio trasversale basato su una grande popolazione (Urban HEART-2), 15.069 individui (età ≥ 60) furono selezionati in modo causale sulla base di un campionamento cluster multifase nella città di Teheran, in Iran, nel 2011. Tutti i partecipanti furono intervistati da personale addestrato attraverso un questionario standardizzato finalizzato ad acquisire informazioni sulla prevalenza della disabilità, le tipologia di disabilità e le variabili socio-demografiche. I dati sono stati analizzati usando statistiche descrittive ed il Test del Chi Quadrato.
Risultati: Il 54.8% (*n* = 8.264) della popolazione dello studio era di sesso maschile. L'età media dei partecipanti era pari a 68,93 anni (*SD* = 7.27) e la media dell'indice di massa corporea (BMI) era di 26,21 kg/m2 (*SD* = 4.40). In base ai nostri risultati la prevalenza complessiva di disabilità è stata dell'11%. La perdita di udito (68.3%) e l'indebolimento dell'udito (10.4%) sono state le forme di disabilità con maggiore prevalenza nel nostro campione. La maggior parte dei partecipanti utilizzava i servizi di centri di riabilitazione privati. Sono state rilevate differenze statisticamente significative in termini di età, di BMI e di titolo di studio tra il gruppo di individui con una o più disabilità ed il gruppo di individui senza disabilità.
Conclusione: La disabilità colpisce direttamente il funzionamento quotidiano degli anziani limitando le loro attività fisiche e sociali, la capacità di mantenersi auto-sufficienti e, quindi, di scegliere liberamente il proprio stile di vita. Le strategie di prevenzione dovrebbero concentrarsi sulla riduzione dell'incidenza di malattie croniche e sul miglioramento dello stato socio-economico degli anziani.

TAKE-HOME MESSAGE

In Iran, based on Urban HEART-2 study, the overall prevalence of disability was about 11%, and the most prevalent disability in the elderly was hearing loss. The majority of the participants were using services of private rehabilitation centers. Advanced age, high BMI, and poor education were statistically significant associated with disability.

Competing interests - none declared.

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INTRODUCTION

Today, the people live for a longer time in average that in every other moment of the history. Global life expectancy (LE) has increased from 64.5 years in 1990 to 71.7 years in 2016 [1]. In 2011, World Report on Disability has showed that more than one billion people experience disability worldwide [2]. However, few data are available on the prevalence of disability in low-income countries, particularly among older people [3]. Physical disability results primarily from chronic diseases and is highly prevalent in older adults [4]. Physical functioning is a core element of health-related quality of life and predicts further functional decline, morbidity, health services use, and death [5]. There is a long research tradition of measuring functional disability as an indicator of health, especially among older adults [6, 7]. Compared with unimpaired individuals, people with impaired mobility have a 2-fold increased risk of falling, institutionalization, and death and 4-5 times higher risk of functional dependence [8, 9]. Additionally, impaired mobility may cause loss of autonomy. It can be accompanied by pain with an increased burden on social networks, and experience of poorer quality of life. It can lead to a higher likelihood of depression and social isolation [10–12]. Measures of physical function have been developed over the last 40 years to characterize health status, predict prognosis besides present and future health services needs, and for program evaluation [13]. While many population-based studies on functional disability in older adults have been conducted in more developed Western countries with different trends, few studies on less developed countries have been reported. However, they are limited to province-level surveys [14–17]. Adib-Hajbaghery measured the prevalence of disability in older adults of Kashan and reported the severity of disability among the studied subjects to be 37.1% mild, 38.6% moderate, 20.0% severe and 4.3% extreme [14, 18]. In 2015, Tanjani et al. demonstrated that the prevalence of mobility impairment and physical functioning limitation was 63% among older adults in five provinces of Iran [17]. In 2011, the number of Iranian aged 60 years and older was about 6,200,000 [19]. By 2020, the population aged 60 years and older will increase and account for 20% of the total population [20]. Using a large, unique, and nationally representative sample of the non-institutionalized Iranian elder population, the present study addresses some of these research gaps. We aimed to investigate the prevalence and type of disability among older adults. We also explored socio-demographic correlates of functional disability.

MATERIAL AND METHODS

Design and Participants

The second round of 'Urban Health Equity Assessment and Response Tool' ('Urban HEART-2') survey was a large cross-sectional study that was conducted in Tehran, in the fall of 2011 [21]. Tehran, the capital of Iran, is the largest and the most populated city in Iran. The population at the time of the present study was about 8.2 millions of people. The city has a large area of about 613 km2, and is divided administratively into 22 districts [22]. Urban HEART was originally developed by the WHO Kobe Centre (WKC: WHO Centre for Health Development) as 'a user-friendly guide for local and national officials to identify health inequities and planning actions to reduce them' [23].

Sampling design

A multistage cluster sampling was applied to collect data in 22 districts and 368 neighborhoods of Tehran. Comprehensive map of Tehran in 2011 separated by the districts and neighborhoods was selected as the sampling frame. 22 districts of the municipality and 368 neighborhoods were considered as stratums in the first stage and the second stage, respectively, and each block was treated as one cluster. A two-dimensional systematic sampling method was used to select blocks in each neighborhood using Geographic Information System (GIS) maps. The total sample size was 34,116 households covering 118,542 individuals of all ages. After excluding par-

ticipants aged < 60 years, the analysis was performed on data of the remaining 15,069 individuals aged ≥ 60 years. Participants were visited at their houses by interviewers who had been trained during a two-day workshop prior to data gathering. The aims of the survey were explained to participants that were able to withdraw at any time during the interview. Interviews were scheduled to meet the requirements and conditions of the respondents, and the respondents were assured that the collected information would be kept confidential [21]. The study was approved by the Ethics Committee of Iran University of Medical Sciences (IUMS) in November 2010.

Instruments

The Disability Questionnaire included a statement about the type of disability: blindness, visual impairment, hearing loss, hearing impairment, speech and language impairments, hand amputation / impairment, foot amputation / impairment, trunk impairment (i.e. pectus carinatum / excavatum), and mental impairment (i.e. intellectual disability, learning disabilities). The questionnaire also included a question about the type of rehabilitation services used: public, charity or private. This questionnaire was reviewed by experts and his face and content validity was established by a panel of national experts from various disciplines [24]. In addition to the Disability Questionnaire, a questionnaire including socio-demographic characteristics such as age, gender, marital status, education level, occupation, and Body Mass Index (BMI) was completed by the participants. BMI was calculated as weight / height2 (kg/m2).

Statistical analysis

The statistical software SPSS 20.0 (IBM Inc., Chicago, IL) was used for all statistical analyses. The descriptive measures were mean, standard deviation, percentages and frequencies. Chi-square test was used to analyze the relationship between variables. The significance level was 0.05. Map was created by using ArcGIS 10.2.

RESULTS

A total of 15,069 older adults, 8,264 (54.8%) males and 6,805 (45.2%) females, were included in this analysis. The mean age of the participants was 68.93 years (*SD* = 7.27) and the mean of BMI was 26.21 kg/m2 (*SD* = 4.40). Table 1 shows the demographic characteristics of the older participants.

Based on the results, the overall prevalence of disability in the sample was about 11% (*n* = 1,653). As shown in Table 2, the most prevalent disability in elderly was hearing loss (68.3%, *n* = 1,127) and the majority of them were using services of private rehabilitation centers. Prevalence of each disability among older adults and frequency of utilization of different rehabilitation services are shown in Table 2.

Figure 1 shows the prevalence of disability in the elders within all 22 districts of Tehran, classified on the basis of five homogeneous clusters. Prevalence of disability varied very widely among districts, from 2.2% (districts 5) to 24.7% (districts 21).

Finally, participants were divided into two groups according to self-reported disability status: 1) those reporting none, and 2) those reporting one or more types of disability. Chi-squared analyses (Table 3) revealed that there were statistically significant differences between these two groups in terms of age ($\chi 2$ (3) = 34.07, $P < .001$), BMI ($\chi 2$ (3) = 14.73, $P = 0.002$) and educational background ($\chi 2$ (5) = 39.50, $P < .001$).

DISCUSSION

Aging may be defined as a progressive, generalized decline of function, resulting in the loss of adaptive response to stress and a growing risk of age-related diseases [25]. The purpose of the current study was to determine the prevalence of disability in the community-dwelling older adults of Tehran, Iran. To the best of author's knowledge, in Iran this is the first report on this subject based on a large population-based survey (Urban HEART-2) [21, 24]. Consistent with findings by Turhanoğlu et al. [26], we found that the overall prevalence of disability in the older

adults was about 11%. Disability and underlying physical, cognitive, and sensory limitations are not inevitable consequences of aging [27]. In a study conducted in the US, approximately 20% of older US adults had chronic disabilities, 7%-8% had severe cognitive impairments, nearly one-third of them had mobility limitations, 20% had vision problems, and 33% had hearing impairments [28]. The second major finding of our research was that the most prevalent disability in our study population was the 'hearing loss'. This finding is consistent with studies by Wandera et al. in Uganda [29] and Cruickshanks et al. in United States [30]. According to Magilvy, hearing loss ranks second only to arthritis among the most common chronic diseases for older people [31]. Berg et al. stated that hearing loss ranks among the 15 most prevalent chronic conditions in Americans aged 65 and older [32]. According to a recent WHO report, approximately one-third of persons over 65 years are affected by disabling hearing loss and more than half of the adults with disabling hearing loss are 65 years or older. However, disabling hearing loss is unequally distributed across the world. In adults of 65 years and older its prevalence decreases exponentially as income increases and is the highest in Sub-Saharan Africa, South Asia, Asia Pacific. Therefore, in low and middle income countries, hearing loss is approximately double that of high income countries [33]. Our results indicate that there is a statistically significant relationship between old age and disability. This finding confirms trends of the 'Study on global AGEing and adult health' (SAGE Wave 1) performed in China, Ghana, India, Mexico, Russia and South Africa [34]. Therefore, consistent with Ostir et al. [35], Di Carlo et al. [36] and Ostchega et al. [37], the likelihood of living affected by a chronic disease causing further disability or more severe loss of functioning increases with age. Moreover, consistent with studies conducted by Ostir et al. in United States [35], Hairi et al. in Malaysia [38] and Abdulraheem et al. in Nigeria [39], our research indicates that the disability rates in population are higher among groups with lower educational level. Indeed, poor education is often associated with lower income and poverty, lower standards of living, unhealthy lifestyle behaviors, unhealthy diet and less frequent use of health and medical care services [40]. Finally, consistent with the findings of the present study, several authors such as Backholer et al. in a meta-analysis [41], Connolly et al. in the Irish Longitudinal Study on Ageing (TILDA) [42], and Al Snih S et al. in a study in developing countries, where access to rehabilitation services and treatment programs may be limited (Latin America and the Carribean) [43] found a statistically significant positive association between BMI and prevalence of disability.

CONCLUSION

In Iran, based on the 'Urban HEART-2' study, the overall prevalence of disability was about 11%, and the most prevalent type of disability, in elderly of our study population, was hearing loss. Majority of the participants were using services of private rehabilitation centers. Finally, consistent with the literature, in our research there were statistically significant differences in terms of age, BMI, and educational background between the group of individuals who reported one or more types of disability and the group of individuals reporting none. Increases in the prevalence of disability have serious consequences for elders, their families, and society in general. For older adults, disability directly affects daily functioning by restricting physical activity, ability to maintain self-sufficiency, and ultimately the freedom to live a chosen lifestyle. Prevention strategies should focus on reducing the incidence of chronic diseases and improving socioeconomic status of older adults.

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Table 1. Characteristics of the older adults (*n* = 15,069).

Variable		N = 15,069	
		N	%
Age	60-69	8848	58.7
	70-79	4666	31
	80-89	1479	9.8
	≥ 90	76	0.5
Marital Status	Single	192	1.3
	Married	11899	79
	Divorced	143	0.9
	Widow	2835	18.8
Education	Illiterate	4069	27
	Elementary	3198	21.2
	Guidance school	2353	15.6
	High school	1186	7.9
	Diploma	2131	14.1
	Academic	21.32	14.2
Occupation	Employed	2163	14.4
	Housekeeper	4982	33.1
	Retired	7179	47.7
	Unemployed	745	4.8
BMI	< 20	313	2.1
	20-25	6505	43.2
	25-30	5825	38.6
	> 30	2426	16.1

Table 2. Prevalence of disability and utilizing rehabilitation services in the study population.

Type	*N* = 1,653			
	N	%		
Hearing loss	1127	68.3		
Hearing impairment	171	10.4		
Lower limb impairment	99	6		
Visual impairment	74	4.5		
Upper limb impairment	43	2.6		
Trunk impairment	39	2.4		
Blindness	33	2		
Mental impairment	28	1.7		
Speech and language impairments	15	0.9		
Lower limb amputation	14	0.8		
Upper limb amputation	10	0.6		
Services	Yes		No	
	N	%	*N*	%
Public	313	18.9	1340	81.1
Charity	23	1.4	1630	98.6
Private	429	26	1224	74

Figure 1. Prevalence of disability in respondents within all 22 districts of Tehran.

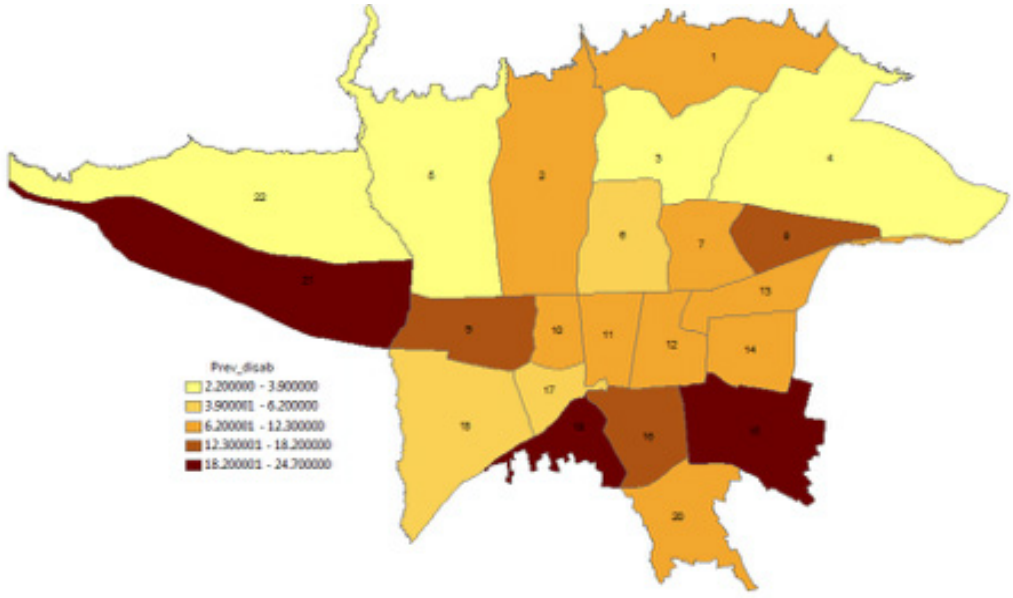

Table 2. Prevalence of disability and utilizing rehabilitation services in the study population.

Variables		Total *N* (%)	Elders without disabilities *N* (%)	Elders with disabilities *N* (%)	Comparison across sectors
Age	60-69	8848 (58.7)	7993 (59.6)	855 (51.7)	X^2= 34.078 df= 3 *P* <.001
	70-79	4666 (31)	4101 (30.6)	565 (34.2)	
	80-89	1479 (9.8)	1257 (9.4)	222 (13.4)	
	≥ 90	76 (0.5)	64 (0.5)	12 (0.7)	
Gender	Male	8264 (54.8)	7330 (54.6)	934 (56.5)	X^2= 1.725 df= 1 *P* = 0.189
	Female	6805 (45.2)	6085 (45.4)	720 (43.5)	
Marital Status	Single	192 (1.3)	172 (1.3)	20 (1.2)	X^2= 0.814 df= 3 *P*= 0.846
	Married	11899 (79)	10623 (79.2)	1276 (77.1)	
	Divorced	143 (0.9)	122 (0.9)	21 (1.3)	
	Widow	2835 (18.8)	2498 (18.6)	337 (20.4)	
Education	Illiterate	4069 (27)	3621 (28.0)	448 (27.1)	X^2= 39.505 df=5 *P* <.001
	Elementary	3198 (21.2)	2800 (20.9)	398 (24.1)	
	Guidance school	2353 (15.6)	2060 (15.4)	293 (17.7)	
	High school	1186 (7.9)	1043 (7.8)	143 (8.6)	
	Diploma	2131 (14.1)	1947 (14.5)	184 (11.1)	
	Academic	2132 (14.2)	1944 (14.5)	188 (11.4)	
Occupation	Employed	2163 (14.4)	1959 (14.6)	204 (12.4)	X^2= 1.156 df= 3 *P* = 0.625
	Housekeeper	4982 (33.1)	4468 (33.3)	514 (31.1)	
	Retired	7179 (47.7)	6328 (47.2)	851 (51.4)	
	Unemployed	745 (4.8)	660 (5.0)	85 (5.2)	
BMI	< 20	313 (2.1)	263 (2.0)	50 (3.0)	X^2= 14.731 df= 3 *P* = 0.002
	20-25	6505 (43.2)	5825 (43.4)	680 (41.1)	
	25-30	5825 (38.6)	5194 (38.7)	631 (38.1)	
	> 30	2426 (16.1)	2133 (15.9)	293 (17.7)	

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ORIGINAL ARTICLE IN
PUBLIC HEALTH

Social determinants of vulnerability to ill-health: Evidences from Mendi Town, Western Ethiopia

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Abstract

Introduction: The premise of this study is that disparity in individuals' degree of susceptibility to physical and mental ill-health is determined by the amount of structurally (socially) distributed resources ('capitals'). Based on Pierre Bourdieu's theory of capitals, the study identified and employed economic, social and cultural capitals acting as structurally distributed resources that determine the health outcomes of people in Ethiopia.
Methods: This study used a cross-sectional survey design to collect quantitative data from 276 randomly selected respondents in Mendi Town, Western Ethiopia to ascertain the role of capitals in determining individuals' level of vulnerability to physical and mental ill-health. Moreover, qualitative data collected through in-depth interviews, focus group discussions, and key informant interviews have been used to deeply understand the pathways in which 'capitals' affect health outcomes.
Results: Our study revealed that inequality in the level of vulnerability to ill-health among individuals across different social-strata is based on unequal distribution of capitals. The study found that the poorest individuals, women, elderly, widowed, divorced, and individuals with poor education are the most vulnerable groups to ill-health in the study area. These groups are deprived of adequate economic, social, and cultural capitals that would enable them to avoid ill-health. Majority of the study population are highly vulnerable to ill-health and they are found to have poor health status due to deprivation of capitals. Nevertheless, only little targeted interventions have been made to increase the levels of capitals available for people and to enhance their health status.
Conclusion: This study is aligned with an economic perspective of the social determinants of health; it showed that social factors are fundamental agents for protecting individuals from ill-health or to make them vulnerable. The authors recommend public health interventions that consider the social context of individuals in order to reduce vulnerability to ill-health and improve their health status.

KEY WORDS: capital; economics; social determinants of health; socioeconomic factors; health policy; Ethiopia.

Riassunto

Introduzione: La premessa di questo studio è che la disparità nel grado di suscettibilità degli individui alla malattia fisica e mentale è determinato dalla somma delle risorse (i "capitali") cosi come sono distribuite dal punto di vista strutturale (sociale). Basato sulla teoria dei capitali di Pierre Bourdieu, lo studio ha identificato ed impiegato i capitali economici, sociali e culturali, quali risorse distribuite dal punto di vista strutturale capaci di influenzare le condizioni sanitarie della popolazione Etiope.
Metodi: Questo studio trasversale ha raccolto i dati di tipo quantitativo da 276 rispondenti selezionati in modo casuale dalla città di "Mendi Town", in Etiopia occidentale, per verificare il ruolo dei capitali nel determinare il livello di vulnerabilità delle persone alla malattia fisica e mentale. Inoltre, sono stati usati dati qualitativi raccolti attraverso interviste semi-strutturate, gruppi di discussione ed interviste con informatori chiave per comprendere in modo approfondito le modalità con cui i "capitali" incidono sulle condizioni sanitarie.
Risultati: Il nostro studio ha evidenziato che la disuguaglianza nel grado di vulnerabilità alla malattia tra gli individui appartenenti a strati sociali differenti è basato sull'ineguale distribuzione di capitali. Lo studio ha evidenziato che gli individui più poveri, le donne, gli anziani, le vedove, i divorziati e gli individui con bassa scolarità sono i gruppi più vulnerabili alle malattie nell'area dello studio in questione. Questi gruppi sono privi di adeguati capitali economici, sociali e culturali che li rendono capaci di evitare la malattia. La maggior parte della popolazione dello studio è molto vulnerabile alla malattia ed in essa sono stati riscontrati scarsi livelli di salute dovuti alla mancanza di capitali. Ciò nonostante, solo piccoli interventi mirati sono stati fatti per migliorare i livelli dei capitali disponibili e per accrescere lo stato di salute delle persone.
Conclusione: Questo studio è in linea con la teoria economica dei determinanti sociali di salute. Esso ha evidenziato come i fattori sociali siano agenti fondamentali nell'aumentare i livelli di protezione degli individui dalla malattia o, al contrario, per renderli più vulnerabili ad essa. Gli autori dello studio raccomandano che gli interventi di sanità pubblica considerino il contesto sociale degli individui per diminuire la loro vulnerabilità alla malattia migliorandone lo stato di salute.

TAKE-HOME MESSAGE

Inequality in the level of vulnerability to ill-health among individuals across different social-strata is based on unequal distribution of capitals. In Mendi Town, Western Ethiopia, the poorest individuals, women, elderly, widowed, divorced, and individuals with poor education are the most vulnerable groups to ill-health.

Competing interests - none declared.

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INTRODUCTION

Disparity in health outcomes of individuals is an universal phenomenon [1, 2]. Within health outcomes surveys, there is an ongoing debate about the relative importance of different types of risk factors (genetic and biochemical versus environmental pathway) to explicate inequality in susceptibility to ill-health [3]. The medical model of health emphasizes both genetic risk factors and biochemical process, and proposes treatments provided by the healthcare system [4, 5]. Hitherto, the medical model of disease causation has been the dominant approach within health research and practices [6]. However, the inadequacy of medical model to capture the complex causal web of chronic and other illnesses paves the way for the application of a multilevel risk factors (environmental, individual and microbiological) approach of disease [7]. The multilevel paradigm reinforces evidence that many factors lead to vulnerability to ill-health. However, testing a comprehensive hypothesis of a gene-environment interaction would complicate research. According to Rose, 'many diseases will long continue to call for both approaches' (genetic and social environment centered), 'and unfortunately competition between them is usually unnecessary' [9]. Therefore, Maziak suggests identifying and working up on certain pathways without unravelling the whole complexity of the relation among social environment, genes and diseases [7]. Several epidemiologists [3, 8] suggested the importance of giving primacy to the social environment or social determinants of vulnerability to diseases. According to Pierce et al., genetic research would lead to important discoveries and new forms of treatment with potential benefits for a few high-risk individuals and researchers [3]. However, emphasis on genetic explanation seldom promotes the health of the majority despite the large investments it demands. On the other hand, social determinants of health perspective have a large potential to improve population health since they emphasize radical approach that removes the underlying causes of ill-health [8]. Accordingly, social determinants of vulnerability to ill-health came forth as priority concern in this study. The increasing body of research indicates that social factors play a determinant role in population health [9, 10]. For this reason, the Director General of the WHO set up a global Commission on the Social Determinants of Health (CSDH) in 2005 [11]. Since Durkheim's classic work on suicide, research has emphasized the importance of social integration and social capital for population's health and well-being [12]. However, a full understanding of the specific social factors and how they affect the health status of individuals has still to be achieved [1, 13]. To design effective policy framework and intervention strategies aimed at improving people's health related quality of life, it is important to understand how socially or structurally distributed resources come to influence people's health causing the onset of diseases. In this context, Pierre Bourdieu's theory of capital interaction holds huge potential to link social vulnerability to poor health [14]. Bourdieu argues that people from different social positions differ from each other with regard to their possession of three forms of capital: social, cultural and economic [15]. The interplay among these capitals is the dynamics that determine people's vulnerability to risks and, as a consequence, their health status [16]. While the role of both economic and social capitals has been studied for a long time in various public health disciplines, less attention has been given to cultural capital [10]. Moreover, the endeavour to examine the interaction among economic, social and cultural capitals and its implication for health inequality has lagged behind [16]. However, literature indicates that there is an inextricable linkage among these three forms of capitals [13]. Furthermore, the vast majority of prior studies on the social determinants of vulnerability to ill-health and health inequality are from developed countries. These studies failed to explain the underlying causal factors and pathways of health inequality in the world's poorest countries. Therefore, it is needed to understand country-specific conditions to design appropriate health related policies [17].

Specifically, there is a pressing need to study the social determinants of vulnerability to ill-health in Ethiopia, where people are still facing high rates of morbidity and mortality [18]. In Ethiopia, some studies [19, 20] have examined the relationship between specific social factors (mainly poverty) and vulnerability to specific diseases (mainly HIV/AIDS). Nevertheless, social factors are numerous and interlocked [13], and they determine the level of vulnerability to diseases in general rather than to specific illnesses [21, 22]. The general susceptibility hypothesis, for instance, argues that social factors influence health by creating a vulnerability to disease in general rather than to any specific disorders [21]. Similarly, fundamental cause theory states that socio-economic factors are associated with numerous risks and protective factors for illnesses [22]. Therefore, this study employed social, economic, and cultural capitals at the same time (social determinants in their holistic form) to study vulnerability to ill-health of adult population in Mendi Town, western Ethiopia by using diversified sources of data and methodological triangulation. Our study was conducted with the general objective of examining the impacts of economic, social, and cultural capitals on vulnerability to ill-health.

Theoretical framework

In this study we used both the Aday's 'Framework for Studying Vulnerable Population' (FSVP) and the Bourdieu's 'Theory of Capital Interaction'. Vulnerability to ill-health can be conceptualized as the degree to which people's social situation leaves them susceptible to health problems [23]. According to World Health Organization (WHO), health risk factors are attributes, characteristics or exposures that increase the likelihood of a person developing a disease or health disorder. Behavioural risk factors are those that individuals have the most ability to modify. Biomedical risk factors are bodily states that are often influenced by behavioural risk factors. Vulnerability stems from the disjuncture between the resources available for individuals and communities and the challenges that they have to face in their lives [24]. Vulnerability is a complex concept and it is a result of various levels of influence [23, 24]. Indeed, vulnerability to health risk factors is determined by political, economic, and institutional people's capabilities [14]. For this reason, we developed a framework in order to consider this complexity and all above mentioned levels. The 'Framework for Studying Vulnerable Population' (FSVP) offered by Aday (2001) takes into account the correlates of vulnerability to ill-health that operates at both community (macro) and individual (micro) level. Aday identified three key concepts that are important to examine the social determinants of vulnerability to poor physical, psychological and social health [25]. These concepts are: a) relative risk; b) resource availability; and, c) health status. Risk is one of the keys to vulnerability in the Aday's model. Risk factors refer to attributes or exposures associated with the occurrence of health-related outcomes. The concept of 'relative risk' assumes different vulnerability of different groups to poor health. 'Resource availability' is defined as opportunities, and material, and nonmaterial resources associated with the social characteristics (age, gender and ethnicity) of the individuals. This concept (material availability) can be enriched through the adoption of Bourdieu's theory of capital. FSVP bases the measurement of 'health status' (physical, mental and social) on the patient's perceptions, clinician's judgments or reported level of functioning [25]. The potential utility of Bourdieu's theory of capitals for understanding the logic of healthy and unhealthy practices has received extensive support [10]. According to Bourdieu, the unequal distribution of structurally based resources (capitals) can be understood as part of the fundamental system of inequality in a given society. His concept of capital is based on the distinction of three forms: social, economic and cultural capital. These three forms of capital are interrelated and inextricably linked [13]. Combining Aday's FSVP with Bourdieu's theory of capitals, we assumed a global perspective to understand

vulnerability that encompasses different unit of analysis (micro-macro) and multiple social factors (economic, social and cultural). This study used resource availability concept of Aday as a starting point and incorporated Bourdieu's economic, social and cultural capitals. Resource availability influences relative risk and relative risk in turn influences health status (vulnerability to ill-health). This perspective is thoroughly pivotal to understand the dynamics of vulnerability.

MATERIALS AND METHODS

Study design

This study was carried out in Mendi Town, located in the western part of Ethiopia at a distance of about 570 kilometers away from Addis Ababa. Based on figures from the town's municipality, Mendi Town holds a total population of 45,700, of which 21,300 are men and 24,400 are women. According to the data collected by Mendi Town Health Center, the top ten diseases occurred in adults, diagnosed in the year 2014 (Gregorian calendar) and indicated in a decreasing order of prevalence from the largest to the smallest, were malaria, gastritis, rheumatism, typhoid fever, lower respiratory tract infection, pneumonia, intestinal parasite, sexually transmitted infections, hook worm and hypertension. A cross-sectional research with a concurrent mixed method design "QUAN–qual" type were employed for conducting this study. Study samples were identified based on multistage cluster sampling method. Mendi Town was classified into four, more or less homogeneous, 'kebeles' with the corresponding list of households being available from each kebele office. Kebele is the smallest administrative unit in Ethiopia. Kebele 01 has been randomly selected from the four kebeles to represent Mendi Town. The minimum sample size that represents the town was calculated based on the size of households in the selected kebele. An estimate of the sample size was made based on specification of the following parameters: total household size of the sampled kebele, confidence interval, type one error rate and response distribution. Since there is no prior study on Mendi Town upon which estimation of response distribution should be based, 50% response homogeneity (statistically recommended conservative assumption) was assumed. The number of households in the kebele was 971. At 95% confidence interval, 5% type I error rate and 50% response heterogeneity, Raosoft Sample Size Calculator estimated the sample size to be 276 households [26]. The list of households in kebele 01 was obtained from the kebele office and simple random sampling of the households was made by using SPSS version 20. Then, respondents were identified in each targeted household. Eligibility requirements for selecting respondents from each household were age (at least 18 years old) and consent to provide information. Within each household, names of all eligible adults (people aged 18 and older) were listed in a descending order of age on a sampling kish grid. One respondent from each targeted household was selected using kish grid to ensure that all eligible persons in the household were given an equal chance of being included.

Instruments

Quantitative data were collected using questionnaires. A study-specific questionnaire was specifically designed for this study. Items were derived from the three constructs (economic, social, and cultural capital) that compose the Bourdieu's general concept of capitals. We also examined the following socio/demographic variables: age, sex, education background, marital status and income. To measure physical and/or mental health status we used the Short Form 12 (SF-12) modified by authors. The SF-12 is a multi-item generic health survey that measures general health concepts not specific to any age, disease or treatment group. The Short form 12 (SF-12) is a widely used tool for monitoring population health, comparing and analyzing disease burden and predicting medical expenses and provides a valid assessment of health in a general population. Indeed, this instrument provides two aggregate summary measures: a) Physical Component Scale (PCS) and,

b) Mental Component Scale (MCS). In our study, we used an interviewer-administered form (approximately 3 minutes). The general physical health status was measured by the following question: 'In general, how would you rate your general physical health today?' The scale ranged from 1 ('Excellent/Very Good') to 3 ('Poor'). Similarly, the general mental health status was measured by the following question: 'In general, how would you rate your general mental health today?' The scale ranged from 1 ('Excellent/Very Good') to 3 ('Poor'). Finally, the overall health status was measured by the following question: 'In general, how would you rate your both psychological and physical health as a whole, today?' The scale ranged from 1 ('Excellent/Very Good') to 3 ('Poor') [27–29]. To measure the self-rated level of individual 'worrying' we used the Worry Domains Questionnaire (WDQ) modified by authors. WDQ of Tallis et al. was developed as a general measure of non-pathological worry for nonclinical adult samples and covers a broad range of everyday worries, including financial worries. It seems the most promising instrument to study individual differences in the level of non-pathological worry and it is applicable to a wide range of different populations [30–31]. In our study, we used only one item of the WDQ, modifying it in order to focus on some specific types of worrying regarding both adequacy of own income and financial problems in the society of the participants. The self-rated level of financial 'worrying' was measured by these two following statements: 'Adequacy of income makes me worry', and 'Financial status in my society makes me worry'. To measure the self-rated level of individual 'worrying' we developed for each item a five-point likert scale. A score of '1-2' was correspondent to 'Low Worry', a score of '3' to 'Moderate Worry', and a score of '4-5' to 'High Worry'.

The hidden connections between capitals and individuals' vulnerability to ill-health were studied by using a narrative research design. Qualitative data related to the lived experiences of individuals were collected by means of in-depth interviews, key informant interviews and focus group discussions (FGDs). Prompting questions to collect qualitative data were prepared from the concepts included under the theoretical framework. A total of seven in-depth interviews (four with men and three with women) were conducted with adults who were identified as the most vulnerable to ill-health. These individuals were purposively chosen with the help of FGDs participants. Interviews with most vulnerable individuals focused on the linkage between capitals deprivation and vulnerability to ill-health. Key informant interviews were held with knowledgeable community members, health professionals and kebele administration staff in order to gain insights and experiences about the impacts of cultural capitals on the health of people. A total of eight key informant interviews were conducted (3 with community members, 4 with health professionals and 1 with kebele chairman). In addition, all three FGDs (two with women and 1 with men) were conducted with seven participants. Participants of FGDs were purposively selected with the help of kebele officials on the basis of the likelihood that they would be willing to participate and on their capacity to well communicate with other members of group discussion.

Statistical analysis

Descriptive statistics (frequency, percentage, mean and standard deviation) were used to present socio-demographic profile and health status of the respondents. Moreover, variety of statistical tests (ANOVA, t-test, Chi-square and Spearman correlation test) was computed to test the association between self-reported physical and/or mental health status and each construct of independent variables (economic, social, and cultural capitals). Qualitative data was analyzed using thematic analysis. After making thorough rereading of all of the transcribed qualitative data, regularity and contradictory explanations were identified, and finally each explanation was categorized under coherent thematic topics to generate meanings.

Limitation of the study

Although the nexus of all the components of economic and social capitals with health outcomes is presented, our research has limited the analysis of cultural capitals to only one of their components, the so called 'institutionalized cultural' capital.

RESULTS AND DISCUSSION

Socio-demographic data

The study involved 276 respondents, of whom 135 were male (48.9%) and 141 (51.1%) were female. The mean age of the participants was 38.8 years (*SD* = 12.79). Majority of respondents (80.8%) were in the 18-49 age range and only 10.9 % of the respondents were aged 60 and older, indicating a high adult mortality rate in our study area. Participants were married (63%), unmarried (21.4%), widowed (10.1%) or divorced (5.4%). With regard to educational status, majority of respondents (40.9%) were educated up to primary school, others were educated up to secondary school (22.1%), or to the post- secondary school level (28.6%).

The impact of capitals on the health status of people

This study analyzed the impact of economic, social and cultural capitals as a whole on health outcomes of our population study. In the following paragraphs, we examined how these types of capitals may influence people's vulnerability to ill-health. The role of economic capital in determining individuals' level of vulnerability to ill-health has been examined in terms of three key pathways: the psychosocial impact, the health behaviour-related and health-seeking behaviours.

The impact of economic capital on health: A psychosocial and health behavior pathway

The psychosocial theory emphasizes the etiological role of psychological distress generated by an inadequacy and inequality income. As Table 1 shows, only about one third of the respondents reported a 'low worry' level (30.8%) about adequacy of their income to get access to basic needs. On the contrary, more than two third of the respondents (69.2%) reported a 'high' (36.2%) or 'moderate worry' (33%) level that their income could not be sufficient to cover expenses for basic needs. Therefore, majority of the respondents were potentially exposed to psychosocial risk due to income inadequacy. Analysis of qualitative data was also performed in order to identify the ways in which such an income inadequacy may affect both mental and physical health. In our study, three different pathways have been identified. Firstly, individuals lack access to necessity goods such as food, clothing, house and healthcare that they cannot live without. Secondly, income inadequacy can expose individuals to psychological distress that may generate physical, mental and behavioural disorders. Indeed, stress generated by money troubles or fears can lead to the 'Adjustment Disorders' that is an abnormal and excessive reaction to an identifiable life stressor. It is characterized by psychological (anxiety and/or depression), and, sometimes, physical (insomnia, muscle twitches, fatigue, body pain, indigestion) symptoms; it can arise with disturbance of emotions and/or conduct, including behavioural symptoms such as, for example, alcoholism and drugs dependence, and can result in a significant impairment in social or occupational functioning and in an increased risk of suicide and suicide attempts. Moreover, in literature it was found an association between psychological distress and coronary heart disease [32]. In our study, the Chi-square test highlighted a significant difference ($P < .001$) in the level of vulnerability to ill-health among people with different level of 'worry' (see Table 1). Indeed, people who had a 'high' or 'moderate' level of worrying about own income adequacy had also a lower self-reported health status score. Finally, insufficient economic capital could push individuals to adopt unhealthy behaviors as a dysfunctional coping strategy. For instance, a 38 years old male told his life experience, by an in-depth interview, as following: "*I was a porter before becoming frail. I had no regular income and the income was also meager. I couldn't*

rent a house and, thus, I became homeless. In order to be resistant to the challenges of homelessness I started to drink alcohol. Drinking alcohol was the most important thing for me. I was forgetting to eat and I was spending all my money to obtain alcohol. Since I began homeless, I was paying low attention to my hygiene and, for all these reasons, I became ill". Therefore, as a consequence of income inadequacy or absolute deprivation, worrying could lead to a higher vulnerability to ill-health among people. The above interview means that insufficient economic capital, as a meager and/or irregular income, hampers individuals from practicing healthy behaviors (comfortable housing, health conscious diet and sanitary practices) and drives them to follow unhealthy behaviors such as, for example, alcoholism. Not only absolute deprivation, but also relative deprivation can contribute to people's vulnerability to ill-health. According to the relative deprivation hypothesis, a perception of high level of income inequality lead to psychological distress which, in turn, generates mental and physical health disorders [33]. Data from our sample show that majority of respondents with high worrying levels about their economic status in the society had 'poor' levels of (psychological and physical) health status (72%), while only a third of them reported 'excellent/very good' (5.4%) and 'good/fair' (22.6%) health status, respectively. On the other hand, 40.5% of the respondents with a 'moderate' level of worrying and 28.4% of respondents with a 'low' level of worrying reported a 'poor' health status. All the participants with 'moderate' or 'low' levels of worrying about their economic status in the society had 'good/fair' (77.6%) or 'excellent/very good' (53.4%) psychological and physical health status (see Table 1). Hence, Chi square test showed a significant ($P < .05$) association between self-rated health status of respondents and levels of worrying related to their income adequacy ($X^2(2) = 102.34$, $P < .001$) and their economic status in the society ($X^2(2) = 55.52$, $P < .001$). The onset of stress-related health disorders as a consequence of perception of inequality in own economic status in the society was also confirmed by qualitative data. Indeed, one of the female key informants stated as following: "*In my neighborhood, there is deeply, and ingrained feeling of begrudging among individuals because of the success of other people in their business. This dissatisfaction is specifically prevalent among those who are engaged in the same type of business. Those who are worried about the success of others have not a lovely face. They always complain that they are suffering from headache and gastritis. They are not healthy because they hate success of others, especially friends and colleagues*". Therefore, participants of FGDs stated that psychological distress is higher among people occupying lower sectors of the economic ladder in the society. They reported a resultant latent hostility that, in turn, predisposed them to drive unhealthy behaviors such as excessive alcohol consumption or smoking. For example, a male participant of a focus group discussion declared that: "*very often the struggle to manage owns income is, probably, the major cause of psychological distress among people occupying lower socioeconomic positions. Indeed, the mismanagement of money leads to attribute success of others to some types of witchcraft or something else. Then, they become alcoholics in order to cope their tensions*". Consistent with our study, also literature shows that level of economic inequality within a society significantly predicts the level of people's vulnerability to ill health. Indeed, according to Abbott when people occupying lower strata of economic hierarchy compare their status with the well-to-do people, they experience psychological distress that affects their mental and physical health [34]. Wilkinson argues that economic inequality generates anxiety disorders that threaten individuals' health [33]. Therefore, vulnerability to ill-health appears to be correlated not only with absolute levels of income but, it appears to be more strongly associated with the unequal distribution of income within a society. Indeed, a cross-sectional ecological study conducted by Waldmann showed that an increment of 1% of national income held by the 5% richest of a given population could lead to an increase in the infant mortality rate of about 2 infant deaths per 1,000

Table 1. Psychosocial effects of economic capital on both psychological and physical health (n = 276). * P < .05; **P < .001

'Worry'	Responses	Percentage	Self-Rated Overall (Psychological and Physical) Health Status			χ^2
			Excellent/ Very good	Good/Fair	Poor	
'Worry' about adequacy of own income	High	36.2	4(4.0%)	13(13.0%)	83(83.0%)	102.34**
	Moderate	33.0	19(20.9%)	40(44.0%)	32(35.2%)	
	Low	30.8	35(92%)	37(81.6%)	13(26.4%)	
'Worry' about difficult financial status in own society	High	33.7	5 (5.4%)	21(22.6%)	67(72%)	55.52*
	Moderate	26.8	11(14.9%)	33(44.6%)	30(40.5%)	
	Low	39.5	42(38.5%)	36 (33%)	31(28.4%)	

live births [35].

Economic capital and health seeking behavior

The amount of economic resources (cash and assets) available from individuals play a pivotal role in determining the lag time between the onset of a disease and people's access to healthcare services. Table 2 shows that only 41.7% of respondents, in their life, visited health centers for diagnosis or treatment as soon as symptoms of illness appeared. Majority of respondents visited health centers only when their health disorders became unbearable (47.8%) or they rarely visited health centers despite serious diseases (10.5%). Table 2 indicates a significantly positive association between a (self-reported) poor physical health status and lower levels of health-seeking behaviours (X^2 (2) = 99.588, P < .001). Indeed, low levels of health-seeking behaviours have the potential of making people more vulnerable to ill-health, while higher levels of health-seeking behaviours allow people to take immediate remedial action before their health status decrease. Moreover, in our study, Chi Square test showed a significantly positive association between gender male and health-seeking behaviours, because males seek health cares earlier than females (X^2 (2) = 5.713, P < .001). Probably, this difference can be attributed to the unequal access to the household's economic resources, because women are usually denied of utilizing economic resources that belong to their household. In order to insight these associations and identify causal factors of their health-seeking behaviours, we performed some in-depth interviews. Among respondents who reported that they were visiting health centers 'rarely' or 'only when diseases become severe' (58.3%), majority of them (79.5%) declared that the reason for that was 'fear of medication cost'. The remaining 20.5% of respondents declared 'absence of trust in the effectiveness of treatment' (9.3%), 'unfriendly nature of physicians' (1.2%), 'absence of companionship' (5%) and 'time constraints' or 'refusal of permission from household head or employer' (5%) as other causal factors impeding an early health-seeking behaviours. Our research is consistent with several studies in other developing countries that highlighted 'fear of medication cost' as the most significant barrier of health-seeking behaviours. For instance, according to the 2007 Kenya Household Health Expenditure Survey (KHHES), those who reported to be affected by some illness (17 % of study population) declared that they didn't seek healthcare because of lack of money (50%) [36]. According to the Ethiopian health-care system, the payment for health-care services is primarily out-of-pocket. However, our health-care system provides a special assistance for people who cannot afford to pay. At the kebele level, the poorest are eligible

for free health care services by kebele's facilitation. However, a key informant interview with a kebele leader indicated that the quota for the poorest allotted per year for a kebele doesn't exceed three to four despite the existence of a large population of poor people. Therefore, the Kebele's facilitation could not serve all entitled poor individuals. In a In-depth interview, a 38 years-old-male stated: "*I tried to access free medical service with the help of kebele officials. However, kebele officials asked me whether I had identity card, but I had no identity card since it is given on the precondition that you have a private or rent house in the kebele. As I was a homeless, I couldn't get free medication*". Moreover, there is no an equal treatment by kebele's officials. A 42 years old woman stated: "*Kebele officials humiliate your difficult situations. You go to a kebele to seek credentials that testify that you are poor in order to get free medication. However, officials are cordial only with people who are decently clothed. This issue pushes the poorest to renounce the help of kebele*".

Table 2. Association between types of health seeking behaviours and physical health status (n = 276). *P < .05; **P < .001 (a) the stage of health seeking behavior vs sex (b) the stage of health seeking behavior vs health status.

Type of Health-seeking behaviours: *'I try to access health care services':*	Percentage	Sex of respondents			Physical Health status (SF 12)			
		Male	Female	χ2	'Very good'	'Good'	'Poor'	χ2
1. 'As soon as symptoms of disease appear'	41.7%	48.1%	35.5%	[a]5.713*	45 (40%)	55 (47.8%)	14 (12.2%)	[b]99.588*
2. 'Only when illness become severe'	47.8%	44.4%	51.1%		11 (8.3%)	31 (23.5%)	90 (62.2%)	
3. 'Rarely I seek the help of physicians'	10.5%	7.4%	13.5%		1 (3.4%)	4 (11.2%)	24 (82.8%)	

Social capital and vulnerability to illness

Social capital is one of the key social factors that determine health outcomes. In this study, for analytical purpose, social capital was classified into 'structural level', 'household level', and 'individual level' social capitals. The amount of different and available forms of 'individual social capital' (ISC) that can be instrumental, informational, and emotional, is important in order to determine health outcomes. Each of these three components of ISC was measured with only three questions and was correlated with self-rated physical and mental health in order to analyze their roles in determining vulnerability to ill-health. The Spearman's Correlation Test showed a moderate positive correlation between low physical or mental health levels and high levels of instrumental (Table 3, Spearmen's ρ = .483 and .448, respectively), informational (Table 3, Spearmen's ρ = .512 and .352, respectively), and emotional (Table 3, Spearmen's ρ = .298 and .581, respectively) ISC (P < .001). Therefore, individuals with higher levels of ISC were less vulnerable to mental and physical health problems than individuals with less individual social resources. Therefore, assessing the available amount of the three components (instrumental, informational and emotional) of ISC can be useful in order to identify the most vulnerable social groups to ill-health. We studied in our sample levels of three dif-

ferent ISC in respect to different socio-demographic variables (Table 4). Our analysis revealed that older, illiterate, divorced, widowed and lower income people had lower levels of (instrumental, informational and emotional) ISC. On the contrary, the relationship between gender and ISC was different, because, if females had more emotional ISC than males, the latter had more informational ISC than females. These gender-related differences could be explained because of a higher level of education of males and, as a consequence, a more extensive access to resources from males through their networks composed by high level educated friends. Moreover, males' participation in the social and occupational activities of the community plays an important role in getting a better access to informational social capital. On the contrary, with regard to instrumental ISC, in our sample there were no significant differences between males and females. In addition to ISC, 'household social capital' can also affect informational, emotional and instrumental social support. In this way we report the experience of a divorced woman (56 years old age) that in an in-depth interview stated: "*I live alone. I have not any children. When I come back home, there is a terrible silence. My home seems to be a desert. I lost hope in my life. So, I began to drink 'arakie' (it is a locally alcoholic beverage) in order to sleep and forget my desperation. Physicians told me to keep away from alcohol consumption since I am suffering from severe hypertension, but I didn't mind about medical prescription*". 'Structural social capital' involves neighborhood cohesion and solidarity. A strong neighborhood collective efficacy could prevent health-damaging conditions. In our study, out of the total respondents (n = 276), 6.9% of them stated that their neighbors, usually, don't take any collective action to avert or prevent the occurrence of health-damaging conditions, such as poor sanitation. In addition, 23.6% of respondents declared that their neighbors' collective efficacy was 'weak' and the remaining two third of the subjects (69.6%) reported that collective efficacy in their neighborhoods ranged from 'moderate' to 'strong' (37.7% and 31.9% respectively). Participants of focus group discussions pointed out the absence of strong collective efficacy that warrants prevention of infectious diseases like malaria. A female FGD participant stated: "This area is malarial. However, residents are reluctant to take collective measures. Moreover, my neighbors are not careful in what they do. For instance, I pour out irresponsibly sewages that flood the premises of my neighbors. My uphill neighbors do the same to me".

Participants of FGDs also highlighted that trend in the level of neighborhood collective efficacy is declining due to poverty, while preoccupation of residents with economic activities is increasing. According to participants, the old Oromo byword 'ollaafi waaqatti gadi ba'u' (it can be roughly translated to mean 'God and neighbors are close at hand in times of troubles') is becoming futile. Moreover, participants stated that declining state of neighborhood cohesion is also resulting in massive engagement of youths in health-damaging behaviours like smoking, drinking, chewing khat and engaging in premarital sex. In addition, the past, strong, communal life that served to maintain social norms and morality for a long time, now is devaluating. Consistent with our research, in several studies [37, 38] a positive effect of neighborhood social capital on health has been reported. For example, Sun et al., showed the importance of neighborhood social capital with the Chinese motto 'a neighbor that is near is better than a brother faraway'. In addition, Sun et al., reported a dwindling trend in the level of neighborhood social capital and the consequential health disorders [38].

Cultural capital and vulnerability to ill-health

There are many components or variables of cultural capital. In our study, we used 'institutionalized' cultural capital that is easy to measure, for evaluating to what extent cultural capital affects people's health. Indeed, institutionalized cultural capital involves skills and knowledge that are important to reduce vulnerability to ill-health. Moreover, institu-

Table 3. Spearman Correlation Test (Rs) between social capital components and health (physical and mental) status indicators (n = 276). **P < .001

	Physical health	Mental health
Instrumental social capital	.483**	.448**
Informational social capital	.512**	.352**
Emotional social capital	.298**	.581**

tionalized cultural capital, especially education, influence also both social and economic individuals' capitals, and indirectly affects people's health status. As we have shown earlier, vulnerability to ill-health decreases with a higher educational level. However, there is a difference between 'institutionalized cultural capital' and 'informational social capital'. The first includes the fund of health-related knowledge that individuals have accumulated. The second refers to the existence of people in one's network who encourage healthy lifestyle. However, health-related cultural capital can also be reached from other informal sources of education, in addition to schooling. Our data indicate that 83.3% of the study population has access to one or more sources of health literacy while the remaining 16.7% indicated to have no access to any sources of health literacy. In our study area, the source of health literacy, was mass media (tv, radio) for the majority of respondents (51.8%). Moreover, informal conversation with colleagues and friends was the second most cited source of health literacy (40.9%). Only 21.7% of respondents got access to health-related information from physicians. Finally, 'reading' was the least source of health literacy (11.2%). Therefore, apart from mass media, which were supplying information to more than half of the total respondents, all other sources of health literacy, such as 'reading newspapers', 'getting advices from physicians' and 'take informal conversations with friends', were useful for the minority of respondents. Provision of health-related knowledge to the community received little attention in the study area despite its health protective value. Participants involved in our study revealed that the FGD sessions organized by researchers were the first platform that enabled them to acquire health-related information. Similarly, participants unanimously indicated that local authorities usually assemble them to discuss about issues related to security instead of health- related issues. Nevertheless, the Ethiopian health policy accords prominence to the dissemination of health-related information, education and communication to enhance health awareness [39]. A review of literature about healthy behaviours by Dupas and Nber stated lack of information related to illnesses as a factor for underinvestment of developing countries' households in preventive healthcare [40]. Our study found that access to health literacy is also gender related. With the exception of informal conversations, male respondents had higher access to different types of health literacy, such as media, physicians and reading than female respondents. This difference might be due to higher occupational level and higher educational status of males than females. For this different level of access to health-related information, the women's vulnerability to ill-health is higher than males. This finding is opposite to several findings from developed countries in which women are reported to have a better access to health literacy [41, 42]. For instance, a research conducted in Finland by Ek, showed that women are more aware of health-related information than men [41]. Therefore, more attention should be given to these issues in developing countries in order to increase and diffuse a better health-related information. About mass media as the most important source of health-related cultural capital for the majority of our population, respondents were asked to rate the frequency of watching or listening to the health-related informations

from mass media (Table 5). Respondents stated that they were accessing health-related informations from mass media 'often' (5.8%) and 'sometimes' (38.4%). Nevertheless, more than half of respondents (55.8%) indicated that they 'rarely' or 'never' (32.6% and 23.2%, respectively) watched or listened to health-related informations on media. Limited access to media broadcasting health-related messages, lack of interest in attending health related programs, time constraints and inability to understand the languages in which health related programs are transmitted are the main reasons that restrict access to health-related informations. People's more inclination to listening to songs and watching spiritual programs or soccer than attending other programs on radio or TV are the other factors hindering access to health-related informations on our media. This study showed that access to health-related informations on media (institutionalized cultural capital) would be useful in order to reduce the level of people's vulnerability to ill-health. Those people who 'rarely' or 'never' did not get health-related programmes on media are more vulnerable to health-disorders than those who have better access. As Asp et al. [43] showed in a study conducted in Southwestern Uganda, using mass media provides health promoting

Table 4. Determinants of the amount of instrumental, informational and emotional social capital possession (n = 276). *P < .05 **P < .001.

		Instrumental social capital		**Informational social capital**		**Emotional social capital**	
		Mean	T-Test	Mean	T-Test	Mean	T-Test
Sex [a]	Male	9.21	1.961	7.90	3.714**	7.76	2.000*
	Female	8.58		6.75		8.37	
Age [b]	18-29	8.71	4.818**	7.37	2.677*	8.44	3.091*
	30-39	9.39		7.45		8.45	
	40-49	8.90		7.46		7.84	
	50-59	8.00		7.04		8.00	
	60+	7.23		5.93		6.73	
Education [b]	Non-literate	6.22	14.208**	4.96	25.488**	6.57	10.121**
	Elementary education	8.50		6.41		7.46	
	High school	9.38		7.98		8.49	
	Post-secondary education	9.86		8.78		9.05	
Marital status [b]	Never married	8.44	11.948**	7.49	3.235*	8.05	4.699**
	Married	9.51		7.52		8.39	
	Divorced	7.00		6.87		6.93	
	Widowed	7.00		5.93		6.71	
Income [b]	>750	6.61	50.082**	5.26	31.067**	6.57	15.712**
	751-1500	8.25		7.12		7.76	
	1501-2250	9.42		7.75		8.63	
	<2250	10.77		8.75		9.07	

Table 5. Institutionalized cultural capital and vulnerability to ill-health. $^{**}P < .01$ (a) F-value for PCS (Physical Component Score) (b) F-value for MCS (Mental Component Score).

	Response	Frequency	Percentage	Health status		ANOVA Test
				PCS	MCS	
Listening to or watching health-related informations on mass media	Never	64	23.2	35.37	37.28	[a]40.733**
	Rarely	90	32.6	42.19	44.81	[b]17.558**
	Sometimes	106	38.4	49.10	46.68	
	Often	16	5.8	51.29	46.49	

awareness, knowledge, attitudes, social norms, and healthy behaviours.

CONCLUSION

The purpose of this study was to investigate the influence of social factors on vulnerability of Ethiopian people to physical and mental health disorders. Our study found that people's positioning across the hierarchical socio-demographic and socio-economic structures of society strongly determine their level of vulnerability to ill-health. Our study shows that economic, social, and cultural capitals play a pivotal role in buffering susceptibility of individuals occupying different social positions to health disorders. Besides contributing to the increased evidence that vulnerability to ill-health is significantly determined by the social contexts in which individuals' life is embedded, this study challenges the conventional biomedical approach of conceptualizing etiology and treating illnesses, and contrasts with the dominance of 'geneticization' in health studies, a process which consists of an increasing tendency to use genetic explanations to describe health status differences between individuals and groups [44]. Furthermore, this study invalidates the conventional public health intervention in which health-risks are individualized and rational choice theory is emphasized for medical decision making. Finally, our study calls for the application of critical public health in which the broader social factors are considered for promoting public health. Specifically, the study recommends public health interventions in order to enhance the economic, social and cultural capital of people to reduce people's vulnerability to ill-health.

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CASE REPORT IN INFECTIOUS DISEASES

Tuberculous cardiac tamponade presenting as severe hypoxic hepatitis

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Abstract

A 57-year-old man was referred to the Emergency Department with epigastric and respiratory dependent pain for six days. The physical examination showed mild jaundice, painful liver and muffled heart sounds. Laboratory tests revealed alanine aminotransferase 14,620 IU/L, bilirubin 10.8 mg/dL and serum lactate 13.9 mmol/L. The chest radiograph revealed diffuse interstitial infiltrate predominantly in the right perihilar region with an increased cardiothoracic index. An abdominal ultrasonography confirmed the hepatomegaly and enlargement of inferior vena cava, while the echocardiogram showed a large pericardial effusion with signs of cardiac tamponade. The patient was transferred to the intensive care unit (ICU) where he underwent a pericardiocentesis. A total of 640 ml of hemorrhagic fluid was drained, with significant clinical improvement after the procedure. *Mycobacterium tuberculosis* was isolated from the gastric lavage and pericardial fluid cultures. Ten days after admission and cardiac tamponade drainage the patient was recovered, the liver aminotransferases were close to the normal values and the patient presented a progressive clinical and laboratory improvement with the tuberculosis treatment. Tuberculosis cardiac tamponade usually does not have an acute clinical presentation and is a rare but life-threatening cause of severe hypoxic hepatitis, which may lead to mal-perfusion secondary to blood stasis in the liver. As soon as the cause of liver hypoxemia is removed there will be a rapid and impressive improvement in the liver damage and function markers.

KEY WORDS: cardiac tamponade; pericarditis, tuberculous; hepatitis.

Riassunto

Un uomo di 57 anni è stato ricoverato nel Dipartimento di Emergenza per un dolore epigastrico accentuato dal respiro insorto 6 giorni prima. La visita medica evidenziava un lieve ittero, un fegato dolente e toni cardiaci ovattati. I test di laboratorio rivelavano valori di alanina aminotransferasi pari a 14.620 IU/L, di bilirubina pari a 10,8 mg/dL e di lattato sierico pari a 13,9 mmol/L. La radiografia del torace metteva in evidenza diffusi infiltrati interstiziali soprattutto nella regione peri-ilare destra con un indice cardiotoracico aumentato. L'ecografia addominale confermava un'epatomegalia ed una dilatazione della vena cava inferiore, mentre l'esame ecocardiografico mostrava un importante versamento pericardico con segni di tamponamento cardiaco. Il paziente fu trasferito in unità di terapia intensiva dove venne sottoposto ad una pericardiocentesi. Fu drenato un totale di 640 ml di liquido emorragico con un significativo miglioramento del quadro clinico al termine della procedura. Il *Mycobacterium tuberculosis* fu isolato dale colture effettuate sul lavaggio gastrico ed il liquido pericardico. Dieci giorni dopo il ricovero ed il drenaggio del tamponamento pericardico il paziente si ristabilì, le aminostransferasi epatiche si normalizzarono ed il paziente presentò un miglioramento progressivo del quadro clinico e di laboratorio con il trattamento della tubercolosi. Il tamponamento da tubercolosi cardiaca di solito non ha una presentazione clinica acuta ed è una rara ma potenzialmente mortale causa di epatite ipossica severa che può portare a deficit perfusionale da stasi epatica. Quando la causa dell'ipossiemia del fegato viene rimossa, si assiste ad un rapido e notevole miglioramento del danno epatico e dei markers di funzionalità epatica.

TAKE-HOME MESSAGE

Hypoxic hepatitis may occur due to tuberculous cardiac tamponade and removing the cause of liver hypoxemia lead to an impressive and rapid improvement in the liver damage and function markers.

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INTRODUCTION

Acute ischemic liver injury, termed hypoxic hepatitis (HH), is the most frequent cause of markedly raised aminotransferase levels in critically ill patients [1]. The characteristic histopathological finding in this syndrome is centrilobular hepatocytes necrosis, due to reduced oxygen supply to the liver cells. Several mechanisms are involved in the pathogenesis of HH: hepatic hypoperfusion (circulatory shock), systemic hypoxia (respiratory failure), low oxygen extraction by the liver (sepsis) and passive venous congestion (right ventricular insufficiency). Heart failure and septic shock are among the most common conditions related to HH [2]. In the typical scenario, HH develops in a patient with known chronic heart failure who seeks medical attention due to an acute condition that predisposes to hypoxemia and/or hepatic hypoperfusion. Among the cardiologic conditions, pericardial effusion has been related to a small proportion of HH cases, where passive hepatic congestion plays a central pathophysiological role [3, 4]. This report presents a patient without previous cardiac disease who arrived in the Emergency Department with HH due to tuberculous pericardial effusion.

CASE REPORT

A man, aged 57 years, was referred to the Emergency Department complaining of epigastric respiratory dependent pain that had begun six days previously. The physical examination revealed increased abdominal girth and generalized mild jaundice. The liver was painful and enlarged, being palpable 10 centimeters beyond the right rib cage. The respiratory rate was 30 breaths per minute and the oxygen saturation was 90%. With cardiac auscultation, muffled heart sounds were detected, presenting a cardiac heart rate of 80 beats per minute. The blood pressure in the supine position was 90/60 mm Hg. Laboratory tests performed upon admission revealed aspartate aminotransferase (AST) 10,030 IU/L, alanine aminotransferase (ALT) 14,620 IU/L, gamma-glutamyl transferase (GGT) 248 U/L, total bilirubin (BRB) 10.8 mg/dL, international normalized ratio (INR) 2.78, creatinine 2.7 mg/dL, lactate dehydrogenase (LDH) 5.735 U/L, and serum lactate 13.9 mmol/L. The chest radiograph showed diffuse interstitial infiltrate predominantly in the right perihilar region and an increased cardiothoracic index. An abdominal ultrasonography confirmed the hepatomegaly, while the echocardiogram showed a large pericardial effusion with signs of cardiac tamponade (Fig. 1). The patient was transferred to the Intensive Care Unit (ICU) where he underwent a pericardiocentesis. A total of 640 mL of hemorrhagic fluid was drained, with significant clinical improvement after the procedure.

A chest computed tomography showed micronodules bilaterally associated with bronchiectasis and ground-glass opacification more marked in the right lung. Bilateral pleural effusion, pericardial effusion, and perihilar and paraaortic lymph nodes were also evidenced (Fig. 1). As the patient was unable to produce sputum specimens, a gastric lavage specimen was obtained in order to carry out an acid-fast bacilli search, which produced a positive result. At that time the patient was being treated with ceftriaxone, for bacterial pneumonia, and an anti-tuberculosis (TB) treatment was added, with levofloxacin, streptomycin, and ethambutol due to hepatitis. Subsequently, *Mycobacterium tuberculosis* was isolated from the gastric lavage and pericardial fluid cultures, obtained during the pericardiocentesis. Serologic tests for HIV, Cytomegalovirus, viral hepatitis (A, B, and C), Epstein-Barr virus, Dengue virus, leptospirosis, and Hantaviruses were all negative.

The patient presented a progressive clinical and laboratory improvement (Fig. 2) and was discharged from the ICU to the ward. As soon as the aminotransferases levels returned to values close to normal, the TB treatment scheme was modified to the standard daily rifampicin/isoniazid/pyrazinamide/ethambutol. A chest radiograph performed 14 days after discharge revealed a significant improvement in pulmonary opacifications and a return to normal cardiac dimensions.

DISCUSSION

Hypoxic hepatitis was formerly termed 'ischemic hepatitis' as it was believed that insufficient hepatic perfusion was the sole factor responsible for centrilobular [5]. With the evolution of knowledge on the subject, Henrion et al., in a pioneering study considering hemodynamic aspects in liver cell necrosis, suggested the term 'Hypoxic hepatitis' as more embracing, since other factors besides liver hypoperfusion were involved in centrilobular hepatocytes necrosis [6]. Currently, it is well known that HH also occurs associated with other conditions, such as severe hypoxemia, reduced capacity of oxygen extraction by the liver, and passive venous congestion [2].

The incidence of HH is low in general wards, where it is estimated at approximately 1 per 1,000 admissions [7]. However, its incidence increases in intensive care units, where rates of up to 21.9% have been reported in cardiac care units [8]. As can be seen, HH typically develops in critically ill patients, especially in those suffering from chronic congestive heart failure. In addition, it can occur in patients without previous cardiac or respiratory diseases, such as those with acute conditions like myocardial infarction or pericardial effusion. The latter condition is reported as a predisposing condition in only 1% to 8% of HH cases [3, 4, 9].

The typical aminotransferase pattern during the course of HH shows a dramatic rise in both ALT and AST, with higher AST levels, within 12–24 hours after the initiation of the event. Usually, the aminotransferase levels fall more than 50% within three days after the stabilization and elimination of the underlying HH-causing condition [2]. The diagnostic criteria are: a) clinical setting of acute cardiac, circulatory, or respiratory failure; b) dramatic but transient increase in serum aminotransferase activity, reaching at least 20 times the upper normal limit; and c) exclusion of other putative causes of liver cell necrosis, such as viral or drug-induced hepatitis [1].

Jaundice is an uncommon finding. The case reported here shows an unusual presentation with ALT level higher than AST, overt jaundice, and high bilirubin levels upon admission, which is an unsual finding in HH. This laboratory and clinical pattern could be explained by late hospital admission. Therefore, the patient was first assessed in a late stage of installed HH when, due to its longer high-life, ALT levels predominated over AST. The enlarged liver seen in this patient strengthens the hypothesis that the patient was first seen at a later stage of the underlying disease. Another relevant aspect, in this case, is that liver disease signs predominated over those of pericardial effusion upon admission and guided the diagnostic workup in the first moment. Typically, the clinical findings of HH are concealed by those of the underlying predisposing condition. Unlike the typical HH setting, where the predisposing condition is related to an acute myocardial event, septic shock or respiratory failure, in cardiac tamponade, the presence of non-specific symptoms and the compensatory response may lead to a delay in seeking a medical care and diagnosis [10].

The evolution observed in this reported case followed what is usually described in HH, where the main therapy is to treat or eliminate underlying conditions. An emergency pericardiocentesis was performed, and circulatory function immediately improved. Liver and renal function normalized over the following 10 days. Bilirubin reached the serum peak level ten days after the initiation of symptoms and went back to normal levels one month after the pericardiocentesis. The ischaemic liver injury in this case probably occurred due to a combination of factors, such as hepatic congestion caused by cardiac tamponade and decreased hepatic arterial perfusion, secondary to hypotension.

Hypoxic hepatitis usually develops in the intensive care unit context and the prognosis depends on the underlying diseases. When it's due to an acute and reversible condition, as the cardiac tamponade, it presents with an unusual clinical and laboratory pattern. In these situations, the tamponade drainage reverses the liver damage in few days, with a good prognosis.

Figure 1. Day 0: Thorax X ray showing lung opacification and increased cardiothoracic index (A); Day 2: Computed tomography showing nodules, ground-glass opacification, and bilateral pleural effusion (B); Day 0: Liver ultrasonography showing huge enlargement of inferior vena cava (C); Day 5: Liver ultrasonography showing a normal exam five days after pericardial drainage (D); Day 0: Echocardiographic image with a huge pericardial effusion (E); Day 0: Echocardiographic image just after pericardial drainage showing total resolution of pericardial effusion (F).

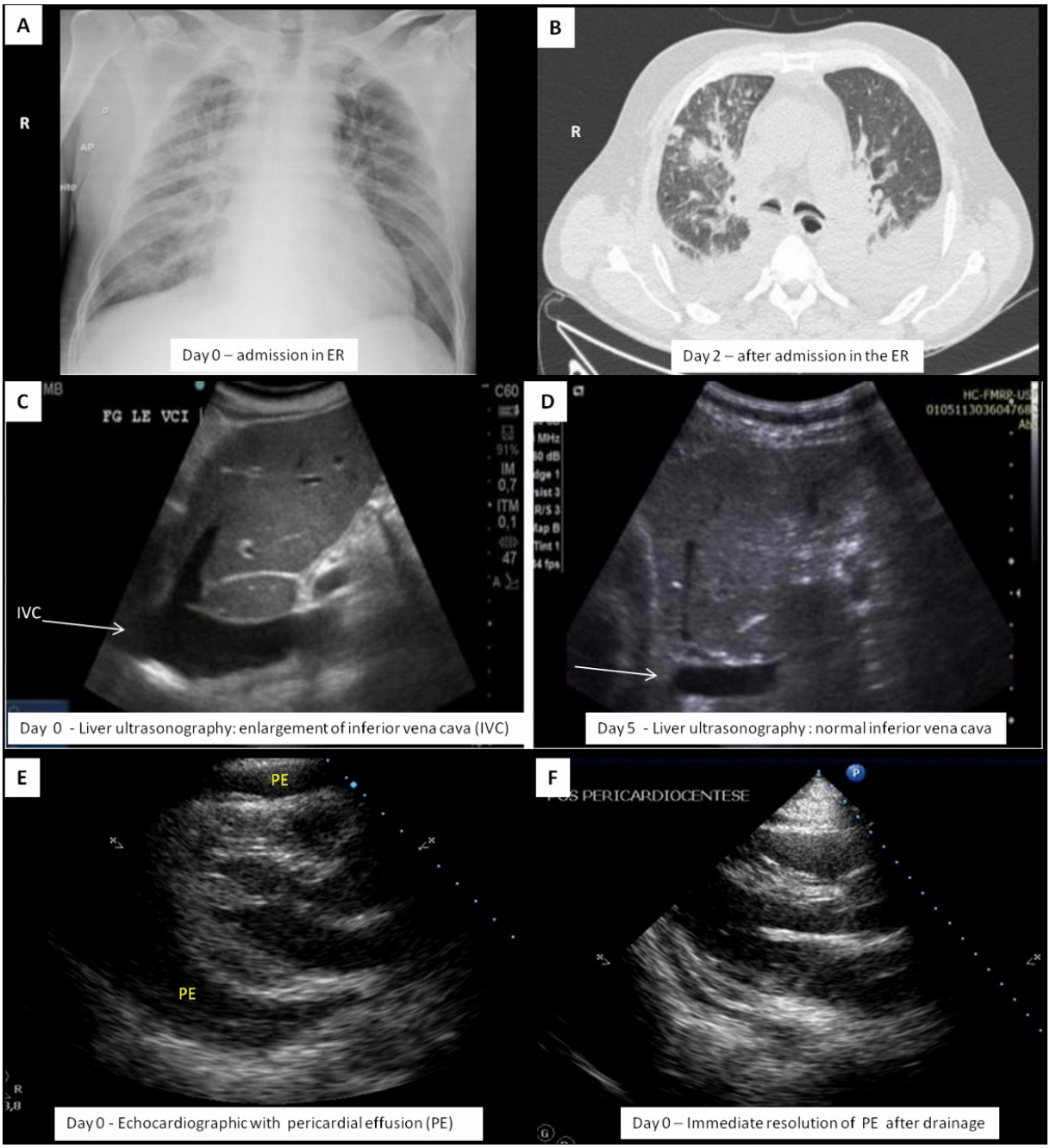
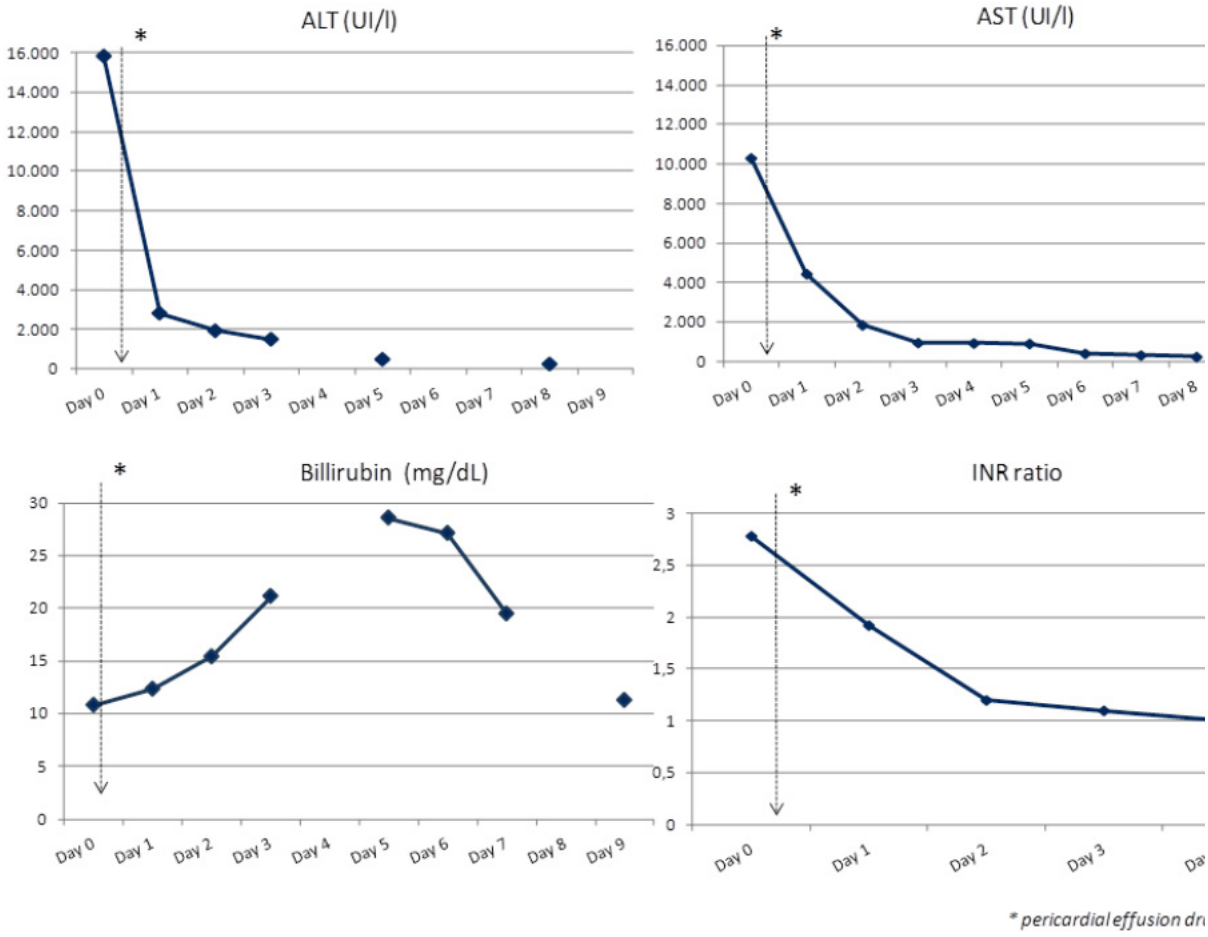


Figure 2. Changes in the liver enzymes levels and international normalized ratio before and after cardiac tamponade drainage. Alanine aminotransferase (ALT), aspartate aminotransferase (AST), bilirubin (BRB) and international normalized ratio (INR) levels before and after cardiac tamponade drainage.



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BOOK REVIEW ARTICLE
IN OCCUPATIONAL PSYCHOLOGY

An ancient theory for a current problem [Review of the book *Healthy Work: Stress, productivity and the reconstruction of working life*, by R.A. Karasek & T. Theorell].

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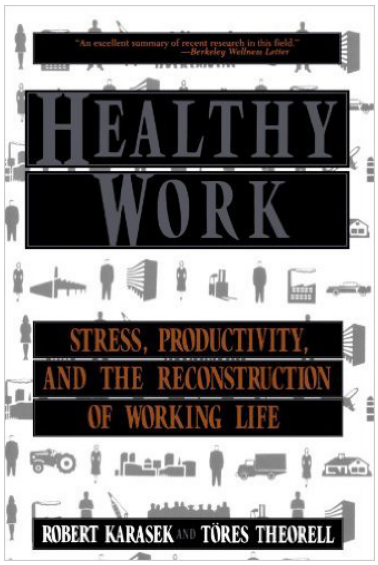

Healthy Work: Stress, productivity and the reconstruction of working life.

By RA Karasek and T Theorell. (pp. 398). New York: Basic Books, Inc.;1990.

Italian Edition of the Book Healthy work: stress, productivity and the reconstruction of working life. Edited by Giuseppe Ferrari as 'Autonomia e salute sul lavoro. Stress produttività e riorganizzazione del lavoro'. (pp.322). Milan, Italy: EdizioniFS;2012. ISBN 978-88-6763-005-9. (Italian).

The word 'stress' descends from latin word 'strictus', which means narrow. From the word etymology, a sense of oppression, lack of movement and constriction is evident. The Austrian doctor Hans Selye was one of the first to use the word 'stress' in relation to the medical field, borrowing it from a physics and mechanics term that indicates the forces capable of deforming a body [1]. Stress is defined by the author as 'a non-specific response of the body to any demand made on it from the external environment', from the principle of homeostasis developed by Bernard and Cannon's work on the role of adrenaline in the 'fight-or-flight' response. From this definition, the author theorizes a complex body response mechanism: the 'General Adaptation Syndrome' (General Adaptation Syndrome - GAS). The 'GAS' theory explains how the body possesses the capability to cope with stress through a general activation in order to achieve homeostasis [2]. Selye's groundbreaking discovery opened the way to a deeper study of the theory of stress [3]. Particularly innovative is the 'Job Strain' or 'Demand-control' model (JDC), developed in 1979 by Robert Karasek. The main assumption of this model is that a situation of high demands and low control is viewed as stressful by the worker [4]. Since the 1980s, the JDC has been the most influential model for work-related stress, being applied to different physical and psycological issues, such as cardiovascular disease, depression and burnout [5–7]. The most prominent strengths of the Job Strain model are its simplicity and its effectiveness, together with its ability to provide crucial factors to determine the worker's wellbeing and health. In the Karasek's model, the 'Job demands' represent the psychological stressors in the work environment as they 'results not from a single aspect of the work environment, but from the joint effects of the demands of a work situation and the range of decision-making freedom (discretion) available to the worker facing those demands' [4]. They include factors such as: interruption rate, time pressures, conflicting demands, reaction time required, pace of work, proportion of work performed under pressure, amount of work, degree of concentration required, and the slowing down of work caused by the need to wait for others. Decision latitude refers to employees' control over their tasks and how those tasks are executed. It consists of both skill discretion and

decision authority. Skill discretion describes the degree to which the job involves a variety of tasks, low levels of repetitiveness, occasions for creativity and opportunities to learn new things and develop special abilities. Decision authority describes both the employees' ability to make decisions about their own job, and their ability to influence their own work team and more general company policies [4]. The Karasek's model creates four kinds of jobs: passive (low latitude, low demands), active (high latitude, high demands), low strain (high latitude, low demands) and high strain (low latitude, low demands). Since its introduction in 1979, the model has been extended to include social support at work as a predictor of job strain. Indeed, Johnson in the 1986 argued that the JDC model mainly focused on job control as a potential psychosocial resource without considering social support which is as important as job control as a moderator [8]. Thus, in 1988, it was proposed that Karasek's model be extended by the addition of social support as a third dimension. In the expanded 'Job Demand-Control-Support' model developed by Johnson and Hall, the highest risk of poor health is expected when employees experience a high isolation-strain (iso-strain) job, that is a job characterized by high job demands, low job control and low social support [9–11]. The Job Content Questionnaire (JCQ) is a questionnaire-based instrument designed to measure the content of a respondent's work tasks in a general manner which is applicable to all jobs and jobholders [12]. The three scales, decision latitude, psychological demands, and social support, are used to measure the high-demand/low-control/low-support model of job strain development. The JCQ has been translated into over 22 languages. In Italy, it is one of two validated tools available for health surveillance of job stress (the other one is the Siegrest's 'Effort Reward Imbalance' Questionnaire) [13]. In 1990, the most internationally well-known publication was the book published by Karasek and Theorell with the title "Healthy Work" (Basic Books: New York; 1990) [14], which has been translated in Italy [15] and in many other countries and has been used both in scientific work and education, and is one of the most cited book of stress. Karasek and Theorell, American (naturalized) and Swedish academicians respectively, analyze in their important work how heart disease, diabetes, and other stress-related ailments are generated by the way in which people are forced to work in their jobs. In the first part of their book, the authors present the Job Strain model providing a detailed and heavily referenced discussion of the evidence, analyzing various stress/work studies done over the years in America and Europe [16–21]. In the second half of the book, they discuss various ways being developed to deal with the lack of worker participation in decision-making on the job. The alternative view presented in the book is that '*damaging job stress is not inevitable and that its causes can be found in the conventional models of work organization in Western industrial society*'. According to the authors '*change in the workplace is not only desirable but essential*'. Models of economic and production organization (Smith, Taylor, Ford) must be avoided; in this way '*it is possible to reorganize production in a manner that can both reduce the risk of stress-related illness and increase aspects of productivity associated with creativity, skill development and quality*' [14]. In this book you can see both scientific divulgation and research, contemporaneously. Despite this book turned 26, it's still useful for employers in order to find organizational measures to improve both health and productivity of the employees. Karasek's model has received sufficient empirical support for it to provide a useful framework for interventions at work. It's one of the most recognized models in occupational stress research. Despite the limitation in the number of job characteristics it considers, demands, control and support are dimensions considered in the most important European methods for the work-related stress risk assessment [5, 7]. Is it an ancient theory for a current problem?

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Science can play its role to address most issue of food security, but development towards the solutions to food insecurity must be led by politics.

Marta Musolino, Gabriella Nucera

Women and young girls are the most vulnerable to HIV/AIDS infection among the general people. It's urgent to reduce gender inequality before implementing any policy for the prevention of HIV/AIDS in Bangladesh as well as in other low income countries.

Joydeb Garai

Motivational self-talk used in combination with mental imagery can reduce perceived exertion and, simultaneously, increase flow state levels in semi-professional Swimrun athletes.

Giuseppe Ferrari, Francesco Chirico, Giuseppina Rasà

Incidence of skin melanoma in Puglia is higher when compared with the rest of southern Italy. This is the first study of incidence, mortality and survival of skin melanoma in Puglia, by district, and its results are suitable for policy makers in order to direct primary and secondary prevention of melanoma skin using foremost awareness-raising campaigns in schools and in medical surgeries.

Anna Maria Nannavecchia, Danila Bruno, Antonino Ardizzone, Enrico Caputo, Anna Melcarne, Antonia Mincuzzi, Fernando Palma, Lucia Bisceglia, Ida Galise, Francesco Cuccaro

Study findings confirmed both attachment avoidance and self-stigma as psychological barriers to seek face-to-face counselling in case of impending emotional problems. To provide clear evidence for determinants underlying online and face-to-face help-seeking intentions, though, further research scoping on the role of individual and public preferences towards self-help services is required.

Jennifer Apolinário-Hagen, Annina Trachsel Dugo, Lisa Anhorn, Britta Holsten, Verena Werner, Simone Krebs

TAKE-HOME MESSAGE

Psychoactive substances consumption remains a serious problem among Italian adolescents. Policy makers should implement preventive measures and counseling approaches in school. Increasing the knowledge of the negative effects of alcohol/drugs use might also lead to a better prevention of the 'Drugs-Facilitated Sexual Assault' phenomenon.

Antonio Villa, Alessia Fazio, Anna Esposito

In Iran, based on Urban HEART-2 study, the overall prevalence of disability was about 11%, and the most prevalent disability in the elderly was hearing loss. The majority of the participants were using services of private rehabilitation centers. Advanced age, high BMI, and poor education were statistically significant associated with disability.

Vahid Rashedi, Mohsen Asadi-Lari, Mahshid Foroughan, Ahmad Delbari, Reza Fadayevatan

Inequality in the level of vulnerability to ill-health among individuals across different social-strata is based on unequal distribution of capitals. In Mendi Town, Western Ethiopia, the poorest individuals, women, elderly, widowed, divorced, and individuals with poor education are the most vulnerable groups to ill-health.

Amanti Baru, Padmanabhan Murugan

Thank You to Our Reviewers 2016

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BUDDHIST PSYCHOLOGY AND COGNITIVE-BEHAVIORAL THERAPY

Authors:
Dennis Tirch, Laura R. Silberstein, Russell L. Kolts
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This user-friendly guide to the basics of Buddhist psychology presents a roadmap specifically designed for cognitive-behavioral therapy (CBT) practitioners. It explains central Buddhist concepts and how they can be applied to clinical work, and features numerous experiential exercises and meditations. Downloadable audio recordings of the guided meditations are provided at the companion website. Essential topics include the relationship between suffering and psychopathology, the role of compassion in understanding and treating psychological problems, and how mindfulness fits into evidence-based psychotherapy practice. The book describes an innovative case conceptualization method, grounded in Buddhist thinking, that facilitates the targeted delivery of specific CBT interventions.