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Conduct Disorder in Times of Crisis in the Eastern Mediterranean Region

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Abstract

Background: The Eastern Mediterranean Region (EMR), comprising of 22 countries, has a high burden of conduct disorder (CD) and has the largest burden of displaced populations. Violence and displacement increase the need for mental health services.

Methods: Using descriptive study design, 2015 global CD burden (disability-adjusted life years DALYs per 100,000 populations) was compared to the EMR burden. Across 25 years (1990-2015) trend of CD in 22 EMR countries was graphed and compared with the global CD burden. Association of CD with a) Corruption Perception Index; b) Global Peace Index; c) Human Development Index was assessed using correlation analysis. CD data was obtained from 2015 Global Burden of Disease Study.

Results: In the majority of EMR countries CD DALYs were higher in comparison to the rest of the world (99 vs 81) DALY's. Countries with the highest burden of CD are ranked as follows: Afghanistan, Somalia, Sudan, Syria, Yemen, Iraq. Correlation analyses demonstrated that CD burden was positively associated with indices of corruption and violence. However, CD was inversely associated with human developmental index.

Conclusion and recommendation: EMR countries in crisis present the highest burden of CD. To the best our knowledge this is the first exploration of CD with indices of violence and corruption. Since CDs can lead to delinquency and criminal behavior in adulthood, if kept undetected and not treated can result to disastrous consequences.

Keywords: Mental health, conflicts, corruption, Disability Adjusted Life Years.

Conduct Disorder in Times of Crisis in the Eastern Mediterranean Region

Conduct disorder (CD) is a psychiatric condition occurring in children and adolescents. According to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), CD is characterized by repetitive and persistent aggression towards others, dishonesty or theft, and destruction of property, which persists during the past 12 months (American Psychiatric Association, 2013). The earlier the onset the more persistent health issues arise, so starting treatment early is crucial and it is most effective if it fits the needs of the child and family (Mental Health America, 2017). Sequelae of CD are serious including higher risk of substance abuse, criminal activity, accidents and injury, poor social relations, poor academic performance, low self-respect, and insufficiency in social, verbal and non-verbal skills, resulting in behavioral, mental, and physical health problems (Erskine et al., 2014).

The Eastern Mediterranean region (EMR) comprises of 22 countries. EMR population consists of a high proportion of children under 15 years of age. However, these countries vary significantly in their gross domestic product, sociodemographic and health indicators. In recent decades the region witnessed major events including political revolutions and change in governments, terrorism, political unrest, war, and conflicts (Charara et al., 2017). In the year 2015, EMR has the highest burden of Internally Displaced Populations (IDP's) and refugees globally, more than half of the world's Refugees and IDPs (29 million) come from the EMR (World Health Organization [WHO], 2015a). Conflicts and ongoing crisis situation results in a high prevalence of mental health disorders, over 50% of the EMR population in conflict countries is estimated to be in need of psychosocial support (Murthy & Lakshminarayana, 2006; WHO, 2015a). Armed conflicts seriously affect the social determinants of mental health and wellbeing, including family and community care networks, access to basic needs and education,

morality, and spirituality (Charara et al., 2017). Stressors of war include loss of human or

material and misery, loss of safety, disruption of the fabric of society, loss of identity, and

discrimination with displacement (Badri, Crutzen, & Van den Borne, 2012). Lack of access to

health care for timely diagnosis and treatment of CD is aggravated by violence and insecurity. In

conflict suffering countries (Afghanistan, Iraq, the occupied Palestinian territories, Sudan, Syria,

and Yemen) many health care providers have been killed or kidnapped, even some health

facilities have been taken over for non-medical purposes (WHO, 2015b).

Statement of Purpose

The aim of this study was to measure the disability-adjusted life years (DALYs per

100,000 population) of CD in EMR in 2015, and explore the associated risk factors in the region

and compare with the CD global burden.

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Literature Review

</div>

Global Burden of Conduct Disorder

The global burden of CD is significant, particularly in male children. In a meta-analysis

of epidemiological studies, it was estimated that the worldwide prevalence of CD among

children and adolescents aged six to 18 years was 3.2%. The majority of the studies were from

Europe and North America. Most studies indicated that boys are more likely to experience CD

than girls (Frick, 2016). Also, Erskine and colleagues (2013) conducted a systematic review of

the global burden of diseases where they derived the prevalence estimates for 21 global regions

by age and sex for the three years' period between 1900 and 2010. Male prevalence of CD was

twice as the female children of the same age. This was the first attempt to quantify the burden of

CD (Erskine et al., 2013).

Mental and behavioral disorders of childhood and adolescence are very expensive in both

human and financial terms. The collective disease burden of childhood mental disorders has not

been estimated, and it would be complex to calculate because many of these disorders can be antecedents to much more disabling disorders during later life (Erskine et al., 2013). Affected children are subjected to all kinds of severe punishments as they will be labeled as a 'bad child' rather than mentally ill and being isolated from all spheres. This aggravates the situation and creates a vicious cycle (Jayaprakash, Rajamohanan & Anil, 2014). It was indicated that children with aggressive behaviors and CD constituted one-third to half of patients who seek psychological services (Salmanian et al., 2015).

The Burden of Conduct Disorder in Eastern Mediterranean Region

In many aspects, EMR countries share a common culture. They have had ancient civilizations and the majority of people have strong Judeo-Christian-Islamic roots. They have a strong concept of family and community and generally adhere to traditional values of gender roles (WHO, 2015b). In a systematic review exploring the prevalence of CD from 1995 to 2014. There was a higher prevalence of CD in the EMR as compared to the world. CD in EMR countries had different frequencies, with CD prevalence rates ranged 1-29.9% for females and from 3.3-34.6% for males (Salmanian, Asadian-Koohestani, & Mohammadi, 2017). In EMR, CD peaked in the age group 10 to 14 years (507 DALYs/100,000) (Charara et al., 2017).

Etiological Factors and Diagnosis of Conduct Disorder

In regard to the etiology of CD in children, three main domains are important. First, factors related to the individual include: gender, deficiencies in cognitive abilities, developmental disorders due to genetic makeup, language deficit, and cognitive disorders such as those linked with autism spectrum. Second, family disturbance factors including: family composition and structure, mental health status of the parents, family history of antisocial behavior, marital conflict, limited financial and emotional resources, family instability and

disturbances in family values, harsh and excessive punishment, lack of parental supervision and/or support, inconsistent parental discipline. Third, environmental factors include factors outside the family including; peers, neighborhood, health facilities and skilled professionals, culture, media and unavailability of self-improvement facilities such as schools (Rowe, Costello, Angold, Copeland, & Maughan, 2010). Clear evidence of social determinants of mental health were mentioned in the literature. For example, armed conflicts have been associated with a wide range of adverse effects on the mental health and psychosocial wellbeing of conflict-affected populations, ranging from transient psychological distress to increased prevalence rate of mental disorders (Tol, Song, & Jordans, 2013).

There are four main criteria for CD diagnosis. All involve problem with self-controlled behavior and emotions. These include, aggressive behavior towards people and animals, property destruction, serious violation of rules, and theft or deceitfulness (Salmanian et al., 2017).

The Role of Armed Conflicts in Conduct Disorder

Children and adolescents living in conflict zones are exposed to high levels of traumatic experiences. Number of armed conflicts and traumatic experiences correlated positively with prevalence of mental, behavioral, and emotional problems (Dimitry, 2012; Dillard, Jacobsen, Ramsey, & Manson, 2007)**.** The political revolutions in Syria, Egypt, Yemen, and Bahrain had immediate detrimental effects on health in the region. The conflicts that have accompanied or followed uprisings have led to increased social divisions, migration, political violence, and disruptions in education and health-care provision. These recent challenges come on top of the prolonged conflicts and insecurity in Iraq, Somalia, and the occupied Palestinian territory (Batniji et al., 2014).

Conduct Disorder Research in the Eastern Mediterranean Region

There is lack of research describing the specific symptom manifestations and relational behavior in children exposed to wartime trauma or factors shaping risk and resilience, these millions of children are in the EMR (Allwood, Bell-Dolan, & Husain, 2002). The limited CD research in the region, that was available comprised of three studies which are briefly summarized. A cross sectional study in Iraq assessed the prevalence of mental disorders in children during the year 2003 to 2004 about half of the children age 10 to 15 years old suffered from CD (Al-Jawadi & Abdul-Rhman, 2007). In Israel, a case control study of two hundred children age up to five years, more than one third of them were diagnosed with CD (Feldman & Vengrober, 2011). In a study to measure the prevalence of CD in Iran the city of Tehran, including elementary school students for the academic year 2009 to 2010 the prevalence of CD was 10.5% and was significantly higher in boys from families with higher divorce rates. Higher prevalence of CD in boys is linked to the social acceptance of the boys committing violence more easily as compared to girls (Azadyekta, 2011).

Conduct Disorder Comorbidity

Attention deficit hyperactivity disorder (ADHD) is a common comorbidity with CD, 44% of children with ADHD were found to have co-morbid conduct disorder in a study in Tunisia (Al-Banna, Al-Bedwawi, Al-Saadi, Al-Maskari1, & Eapen, 2008). Significant association between CD and illegal drug and alcohol use was documented (Copur, Turkcan, & Erdogmus, 2005). Children suffering from CD were experiencing high levels of fearlessness, deceitfulness, and impulsivity (Klingzell et al., 2015). In general, childhood-onset CD comorbidities were ADHD, anxiety disorders, and hostility. On the other hand, adolescent onset CD was associated

with higher rates of Post-Traumatic Stress Disorder (PTSD), alcohol and substance use disorders (Connor, Ford, Albert, & Doerfler, 2011).

Effective Intervention Strategies

Many Interventions were effective in decreasing adolescent's delinquency and the time spend in mental health institutions like family interventions (Woolfenden, Williams, & Peat, 2001) and school-based interventions (Panter-Brick, Eggerman, Gonzalez, & Safdar, 2009). Also providing early interventions and continued monitoring for the child, with a coordinated management plan including clinicians and other mental health specialists, school staff, and others involved in the care of the child, offers the unique opportunity to engage families and maintain young people in treatment without stigma (Eapen & Jairam, 2009).

Mental Health Services in the Eastern Mediterranean Region

Even with this rising trend of mental health disorders over the last twenty years in the region, there has been very slight upgrading in mental health services and facilities. Specially, countries with old legislations about mental health, were conformation of international human rights instruments is not maintained (Rahman, 2017). As a consequence of conflicts and political instability, countries in the region have seen a fall in the available workforce. Despite an increase in the number of outpatients seeking mental health, there was a reduction in the number of outpatient facilities compared to 2011, and the availability of mental health services are ten times lower than the global average across the region, accompanied with underdevelopment of the community-based mental health services (WHO, 2015b). Most of the EMR countries have limited research evidence with which to inform service planning or to monitor implementation (Alwan & Saeed, 2015). Mental health patients in the region tend to express their psychological problems in terms of physical symptoms, to avoid the stigma attached to mental illness. They

also tend to underutilize mental health services and to hold negative attitudes toward formal

mental health services. In fact, they rely on religious leaders as a means of coping with mental

health issues (Al-Krenawi, 2005).

<p align="center">**Methods**</p>

Using a descriptive study design, the 2015 global CD burden (disability-adjusted life

years DALYs per 100,000 populations) was compared to the EMR burden. Across 25 years

(1990 to 2015) the trend of CD in 22 EMR countries was graphed and compared with the global

CD burden. Association of CD with a) Corruption Perception Index; b) Global Peace Index; c)

Human Development Index were assessed using correlation analysis. CD data was obtained from

2015 Global Burden of Disease Study. This study is exempt from IRB evaluation, per 45 CFR

part 46 of the Human Subjects Regulations Decision Chart 1 (Appendix A).

Data Sources

Our exposure variables were Human Developmental Index (HDI), Global Peace Index

(GPI), and Corruption Perception Index (CPI). The following data sets were used, as shown in

Table 1.

Table 1

Data Web Sites

A	Outcome	CD https://vizhub.healthdata.org/gbd-compare/	(DALY's per 100,000 population) Obtained from the Global Burden of Disease 2015 (GBD 2015)
B	Exposure	HDI http://hdr.undp.org/en/content/human-development-index-hdi	Created by the United Nations Development Program (UNDP)
C	Exposure	GPI http://visionofhumanity.org/indexes/global-peace-index/	Produced by the Institute for Economics and Peace (IEP)
D	Exposure	CPI https://www.transparency.org/news/feature/corruption_perceptions_index_2016	Created by Transparency International and the global coalition against corruption
E	WHO	WHO/EMR http://www.who.int/about/regions/emro/en/	EMR countries according to the World Health Organization (WHO)

A) Our outcome variable was CD burden compiled by the Institute for Health Metrics and Evaluation (IHME, 2018) at the University of Washington. IHME provides estimated prevalence of 310 diseases and injuries for the period 1990 to 2016 at global, regional, and national levels. IHME collected and analyzed data by grouping more than 1,800 researches and a large number of input sources to estimate morbidity, mortality, and risk factors for 195 countries and territories. Using data from the GBD 2015, the burden of CD in the EMR was analyzed by country, age group, sex, from 1990 to 2015, the prevalence and incidence by cause and sequelae were determined with DisMod-MR 2.1, (an improved version of the DisMod-MR Bayesian meta-regression tool) based on a generalized negative binomial model. First, it uses incidence, prevalence, and mortality mathematical models to enforce internal consistency between estimates from different epidemiological parameters. Second, it estimates data for countries and world regions with few or no available input data based on their corresponding regional comparisons. Third, it deals with variability in the data due to measurement bias through the use of studies and countries level covariates. Fourth, it spreads uncertainty around the raw epidemiological data through to the final predictions (Charara et al., 2015) (see Table 2).

Table 2

Our Outcome Variable was CD DALY's per 100,000 Population

Years of potential life lost (YLLs)	Years lived with disability (YLDs)	Disability Adjusted Life Years (DALYs)
Number of deaths due to the given disorder at a particular age X the standard life expectancy at that age.	Prevalence of a disorder X severity and comorbidity-adjusted disability weight.	YLLs+ YLDs

B) The Human Developmental Index (HDI) was created by a Pakistani economist in 1990, which was further used by the United Nations Development Program (UNDP) as an indicator to measure the development of countries, since 1990 Human Developmental reports are published every year. The HDI is the geometric mean of standardized parameters for each of the three dimensions (long and healthy life, knowledge, and a decent standard of living). The long and healthy life dimension is assessed by life expectancy, the knowledge dimension is measured by years of schooling for children in school age, and the descent standard of living dimension is measured by gross national income(GNI) per capita. In 2015 there were 188 countries included. The score of HDI can vary between 0 and one, with HDI close to one indicating greater achievement relative to the maximum attainable factors (United Nations Developmental Program, 2016) (see Table 3).

Table 3

Human Developmental Index: Dimensions, Indicators, and Dimensions Index

Dimensions	Long and healthy life		Knowledge				A decent standard of living	
Indicators and values	Life expectancy at birth		Expected years of schooling		Mean years of schooling		GNI per capita ($)	
	Minimum value 20 years	Maximum value 83.2 years	Minimum value 0	Maximum value 20.6	Minimum value 0	Maximum value 13.2	Minimum value 163	Maximum value 108211
Dimension Index	Life expectancy index		Education index				GNI index	

C) The Global Peace Index report (GPI) was produced by the Institute for Economics and Peace (IEP) and developed in consultation with an international panel of peace experts from peace organizations and think tanks, with data collected and organized by the Economist Intelligence Unit. GPI was first lunched in 2007 and reports are published annually, the index measures the extent to which countries are involved in ongoing domestic and international

conflicts, using three broad themes: the level of societal safety and security, the extent of

ongoing domestic and international conflict, and the degree of militarization. GPI ranks the

nations of the world according to their level of peacefulness. The index covers 99.6 % of the

world's population. The scores for each indicator are standardized on a 1-5 measure, countries

score closer to one is related to more peacefulness (Institute for Economics and Peace, 2017) (see

Table 1).

D) The Corruption Perception Index (CPI) was created by Transparency International and

the Global Coalition Against Corruption in 1995 and reports are published annually. It captures

information about the administrative and political aspects of corruption. CPI methodology takes

into account different surveys and assessments from different organizations. The surveys and

assessments used to compile the index include questions related to corruption of public officials,

bribes in public procurement, misuse of public funds, and questions that review the strength and

effectiveness of public sector anti-corruption efforts. However, those measures are estimations of

corruption due to the difficulty of measuring absolute levels of corruption. The scale is from 0 to

100 where 0 means that the country is highly corrupted (Transparency International, 2017).

E) The Eastern Mediterranean Region (EMR) countries are: Afghanistan, Bahrain,

Djibouti, Egypt, Iran (Islamic Republic of Iran), Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco,

Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United

Arab Emirates, Yemen (WHO, 2017). However, Palestine was added as it is mentioned in the

IHME site as part of the region.

Statistical Analysis

The 2015 global CD burden as DALYs per 100,000 populations, was compared to the

EMR CD burden graphically. To track the change over time from 1990 to 2015, the trend of CD

in 22 EMR countries was graphed in excel and compared with the global CD burden. Using

Pearson Product Moment correlations analysis, the relationship of CD with a) Corruption

Perception Index; b) Global Peace Index; c) Human Development Index were also assessed. For

CD, data were coded, entered, and analyzed according to the age group, sex and country.

For the other three variables (HDI, GPI, and CPI) data were coded, entered, and analyzed

according to EMR countries (Somalia, Djibouti, Morocco, Libya, Tunisia, Iran, Afghanistan,

Oman, Kuwait, Palestine, Lebanon, Qatar, Saudi Arabia, Yemen, Iraq, Jordan, Syria, Bahrain,

United Arab Emirates, Egypt, Sudan, Pakistan). SPSS-22 (Statistical Packages for Social

Sciences- version 22) was used for data analysis with level of significance 0.05.

Results

In the majority (15/22) of EMR countries, CD DALYs were higher in comparison to the

rest of the world (99 vs 80.96) DALYs. Afghanistan, Somalia, Sudan, Syria, Yemen, and Iraq

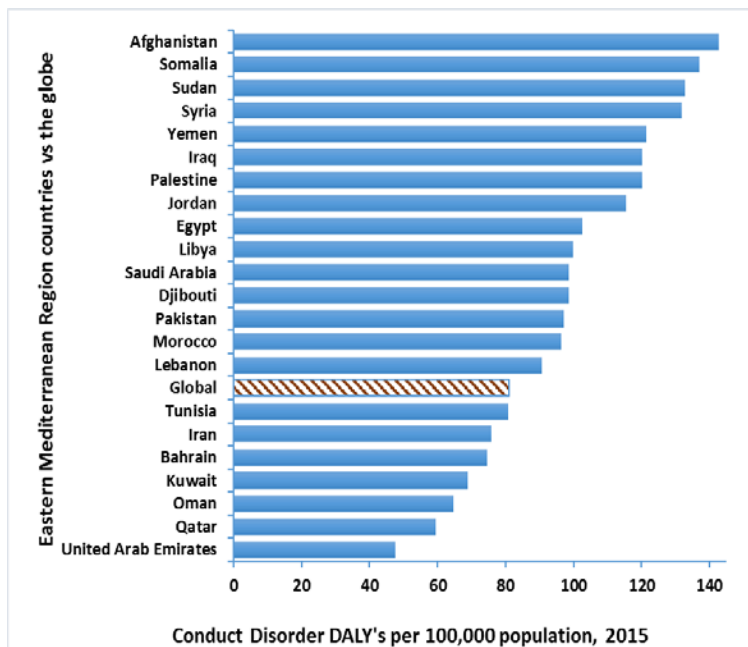had the highest burden (see Figure 1).

Figure 1: Burden of conduct disorder (DALY's per 100,000 population) in the Eastern
Mediterranean region countries compared to the global rate 2015.

Data showed that even though the global CD trend declined over the past 25 years (1990-

2015); countries in EMR with political conflict (Syria, Iraq, Yemen, Afghanistan, Somalia, and

Sudan) still experienced trend of increased burden of CD DALY's (see Figure 2).
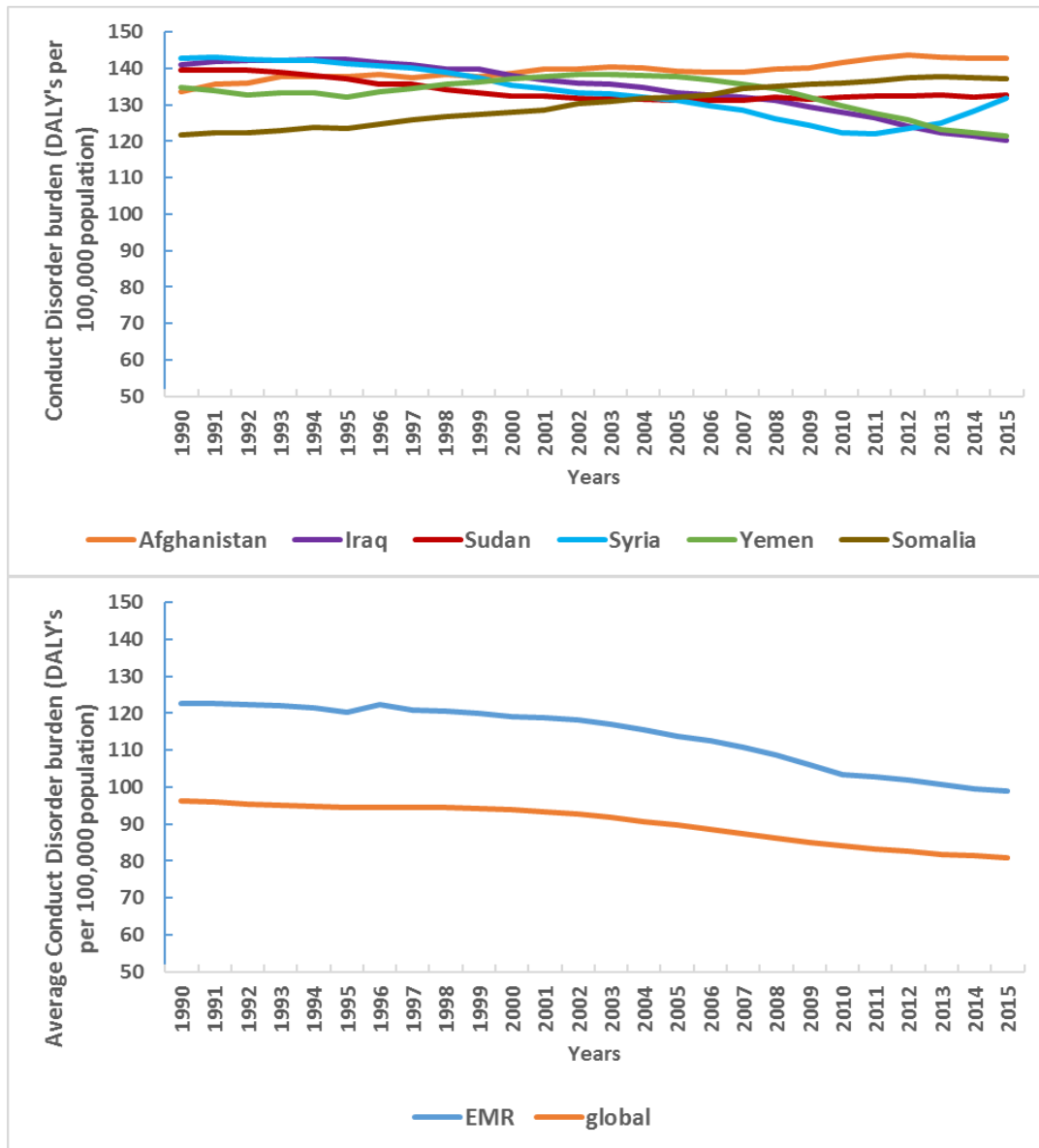
Figure 2: The trend of Conduct Disorder (DALY's per 100,000 population), in EMR compared
to the global burden.

Male to female CD DALY's ratio was almost double in both EMR (1.73) and globally

(1.9) (see Figure 3).

Figure 3: Burden of Conduct Disorder (DALY's per 100,000 population) in the Eastern Mediterranean region countries compared to the global rate according to gender, 2015.

CD burden was measured only in the five to 49 years range and peaked at the five to 14 years old population both in the EMR and globally (see Figure 4).

Figure 4: Burden of Conduct Disorder (DALYs per 100,000 population) in the Eastern Mediterranean region countries compared to the global rate according to age groups, 2015.

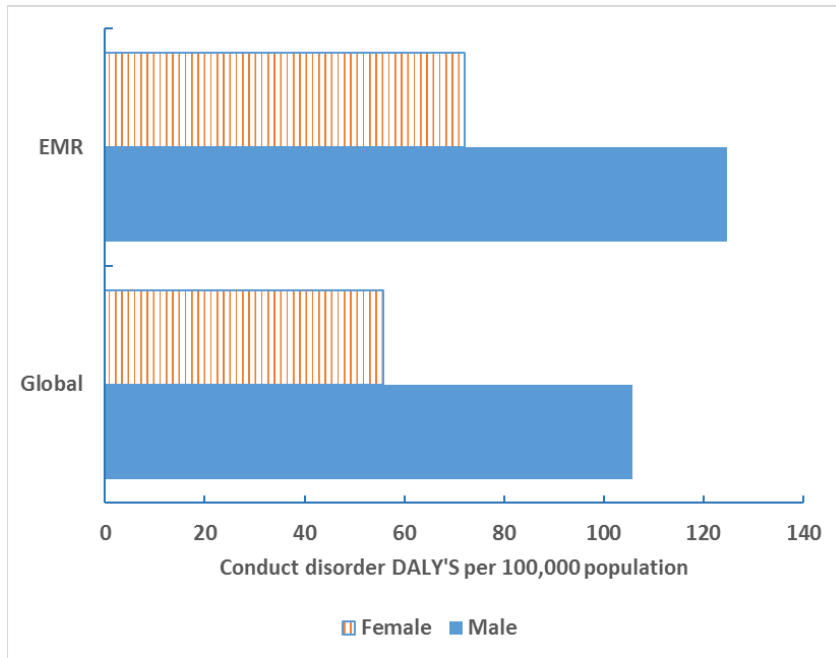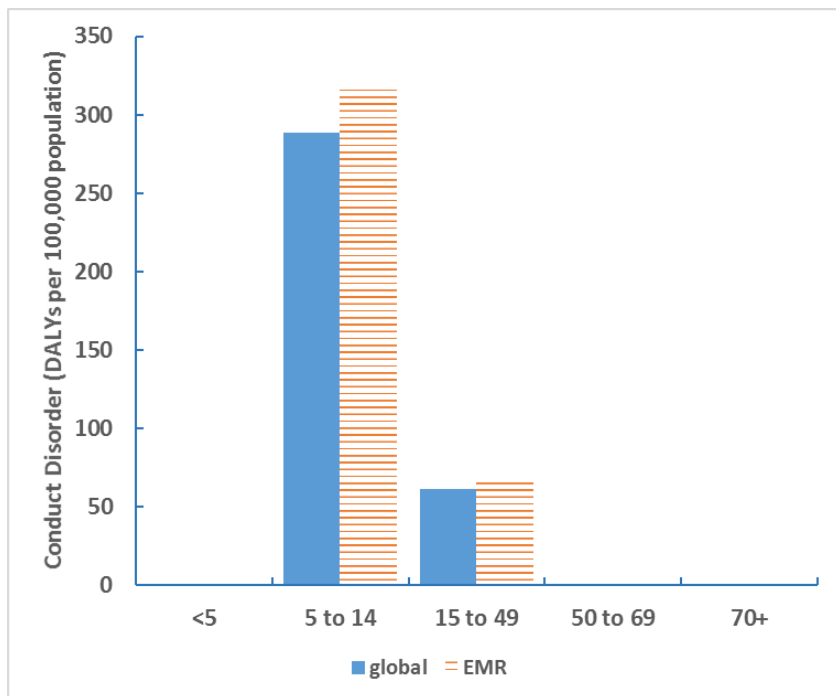The CD burden (DALY's per 100,000 population) was significantly negatively associated with the HDI, R (18) = -.786, p < .001, higher HDI (higher score on X-axis) indicates higher average (long and healthy life, knowledge, and a decent standard of living) and was negatively correlated with CD burden (y-axis). EMR countries with lowest HDI like Afghanistan, Sudan, Yemen, and Syria also had higher CD DALY's (see Figure 5).
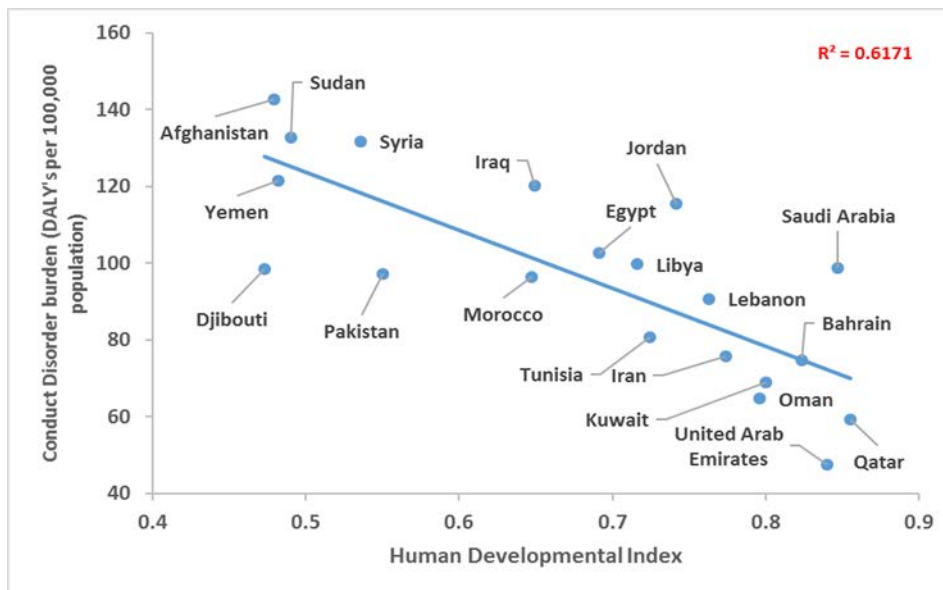
Figure 5. The association between Conduct Disorder and the Human Developmental Index in the Eastern Mediterranean Region countries, 2015.

In the EMR, CD burden (DALYs per 100,000 population) was positively associated with the CPI R (19) = .779, *p* < .001. The higher CPI rank (higher score on X-axis) was an indicator of elevated administrative and political corruption and was positively related with CD burden (y-axis). EMR countries with higher CPI like Afghanistan, Syria, Sudan, and Yemen had higher CD DALYs (see Figure 6).

Figure 6: The association between Conduct Disorder and the Corruption Perception Index Rank in Eastern Mediterranean Region countries for the year 2015.

In the EMR, CD burden (DALY's per 100,000 population) was positively associated with the GPI rank. R (19) = .753, $p < .001$. The higher the GPI rank (higher score on X-axis), was an indicator of more conflicts and was positively associated with elevated CD burden (y-axis). Countries with higher conflict and instability like Afghanistan Somalia, Syria, Sudan, Iraq, and Yemen had higher CD DALY's (see Figure 7).
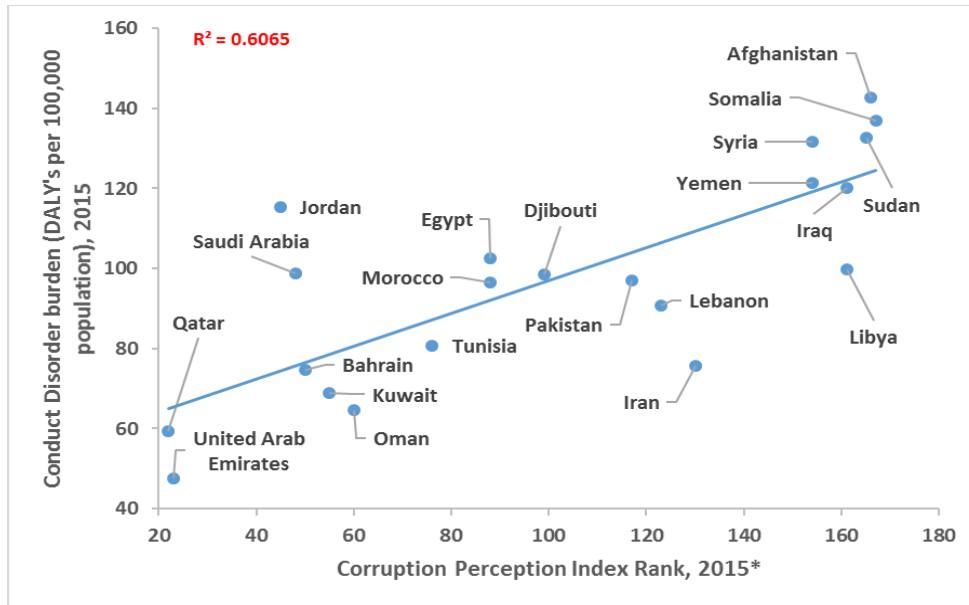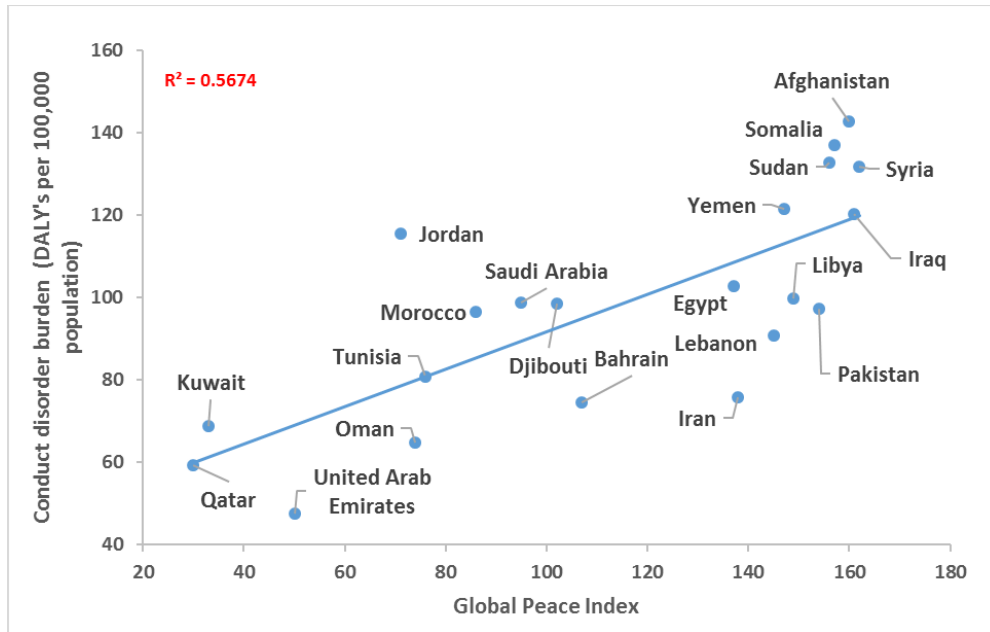
Figure 7: The association between Conduct Disorder and the Global Peace Index Rank in the Eastern Mediterranean Region countries for the year 2015.

Discussion

Conduct Disorder Burden in the Eastern Mediterranean Region

The findings of our study revealed a higher burden of CD in the EMR as compared to the world, which is in line with the results of a systematic review that explored the prevalence of CD in the EMR (Salmanian et al., 2017). This is a public health concern. In general, mental health disorders are ranked high among the top ranking causes of non-communicable global disease burden (Charara et al., 2015). Most of the countries in the region, whether low, middle, or high income, are experiencing high burden of CD. This high CD burden in the conflict affected countries is likely to increase due to the unrest. What makes the situation worse is the fact that these countries are not equipped to deal with this increase in burden. Thus, CD burden will pose a major challenge and strain on resources in the coming years (Salmanian et al., 2017).

Conduct Disorder Male to Female ratio

In our study males suffered almost double the burden of CD DALY's as compared to the females. The male to female ratio was approximately 2.5:1. This is in line with other studies (Sarkhel, Sinha, Arora, & DeSarkar, 2006; Erskine et al., 2013). Causes of CD are the same for both genders, but males most linkage to having more CD is because they experience more risk factors such as hyperactivity and neurodevelopmental delays (Singh, Yeh, Verma, & Das, 2015). Females are less likely to experience aggression and criminality but more likely to show emotional bullying (National Collaborating Centre for Mental Health; Social Care Institute for Excellence, 2013). In a systematic review for the adolescent CD patients in the EMR countries (Iran, Egypt, United Arab Emirates, Iraq, Afghanistan, Yemen, and Palestine) CD rates were up to 30% for females vs. 35% for males (Salmanian et al., 2017). However, CD hospitalized female patients experienced more comorbidity than the males, in a study conducted in Finland for 508 CD inpatient adolescents, suicidal rates PTSD, and major depressive disorder were significantly more commonly the cause of hospitalization among the females (Ilomäki, Hakko, Ilomäki, Räsänen, & STUDY-70 workgroup, 2012).

Conflicts and Conduct Disorder

In the current analysis there was a statistically significant positive association between conflicts and CD burden in the EMR. Within conflict affected populations, CD and PTSD were shown to increase significantly (Charlson et al., 2016). The EMR has witnessed the largest refugee crisis in history (WHO, 2015a). In our study, countries suffering conflict and terrorism had higher CD burden. Iraq carries the highest burden of CD for the males of the age group five to 14 years across the years 1900 to 2014 globally. However, Iraq had the second highest burden after Greenland for the year 2015 as compared to the global burden DALY's of (429.32 vs

363.1) per 100,000 populations, with prevalence ratio of 1.2:1 (IHME, 2017). Conflicts affect the quality of life of children when the basic human rights of children have deteriorated due to family breakdown, which results in the lack of support, security and the opportunity to learn social skills (WHO, 2015; Batniji et al., 2014).

Human Development and Conduct Disorder

In our study there was a highly significant negative association between the HDI and the CD DALY's, countries which ranked lower on the HDI scale had higher CD. The Human Development Report, 2016 addressed the negative link between conflict and human development in that children in conflict-affected countries suffers from an educational deprivation. In 2013 around Thirty million children living in conflict affected countries could not join school (The United Nations Educational, Scientific and Cultural Organization, 2013). In the literature there is a causal association between family's income level and children's CD. This can be clarified according to the social causation hypothesis, that is explained by increased stress on family and limited the resources, and the social context where affected children live (Bradley & Corwyn, 2002; Lahey & Waldman, 2012). Social determinants of CD cannot be tackled by ministries of health alone, evidence that links social determinants to CD health outcomes should be the concern of governments beyond the health ministries, and also other stakeholders in academia and civil society. Hence, detecting countries with a high CD and reducing the inequality of socioeconomic determinants are necessary to prevent this disorder (WHO, 2015). Thus, it is important to empower marginalized communities specially in high divided societies where improving economic growth and democratic governance are insufficient to achieve equity (Powell-Jackson, Basu, Balabanova, McKee, & Stuckler, 2011)

Corruption Perception Index and Conduct Disorder

In our study there was a positive significant association between the burden of CD and corruption. EMR is characterized by weak political institutions, which exclude large proportions of their populations from political representation and government services (Batniji et al., 2014). In the literature there is a link between democracy as a determinant for mental health (Wise & Sainsbury, 2007). In the past two decades EMR suffered steady and worsening corruption and reduction in accountability that explained the origins of some regional revolutions (Batniji et al., 2014). Corruption is likely to damage the ability of the health care system to deliver high quality, effective care to the people who can benefit most. There is growing evidence that high levels of corruption impoverish populations, increase inequality, and cause health status to deteriorate, especially among the most vulnerable population groups (WHO, 2017)**.**

Limitations

CD GBD data were based on best available estimations, data cannot be verified across geographies or time within the same region due to the constraints of local resources.

GBD data was provided as point estimates with levels of uncertainty that varied in width according to the availability and the accuracy of the data sources

Only 11 of the 22 EMR countries had quality epidemiological data to describe the burden of CD. For the GBD study, when data were of poor quality or unavailable, modeling was used to generate the estimates using other available variables for countries with a similar health profile in the region.

As CD diagnoses is subjective in nature; therefore, if the CD patient's express symptoms different from the ICD-10 coding criteria, they will not be included in the GBD.

The YLL's of CD might be under estimated as the vital records rarely consider CD as a cause of death. Adding to that the stigma that might prevent the EMR CD patients from reporting their psychiatric symptoms, that might have biased the EMR CD estimates.

Conclusions and Recommendations

The burden of CD in the EMR is higher than global levels, particularly for young males in conflict regions.

To properly address this burden, EMR governments should implement nationally quality epidemiological surveillance of CD and provide early prevention and treatment services.

In conflict affected countries mental health services can be incorporated as part of humanitarian and development responses. Because, affected populations are at an increased risk of mental disorders and psychological distress.

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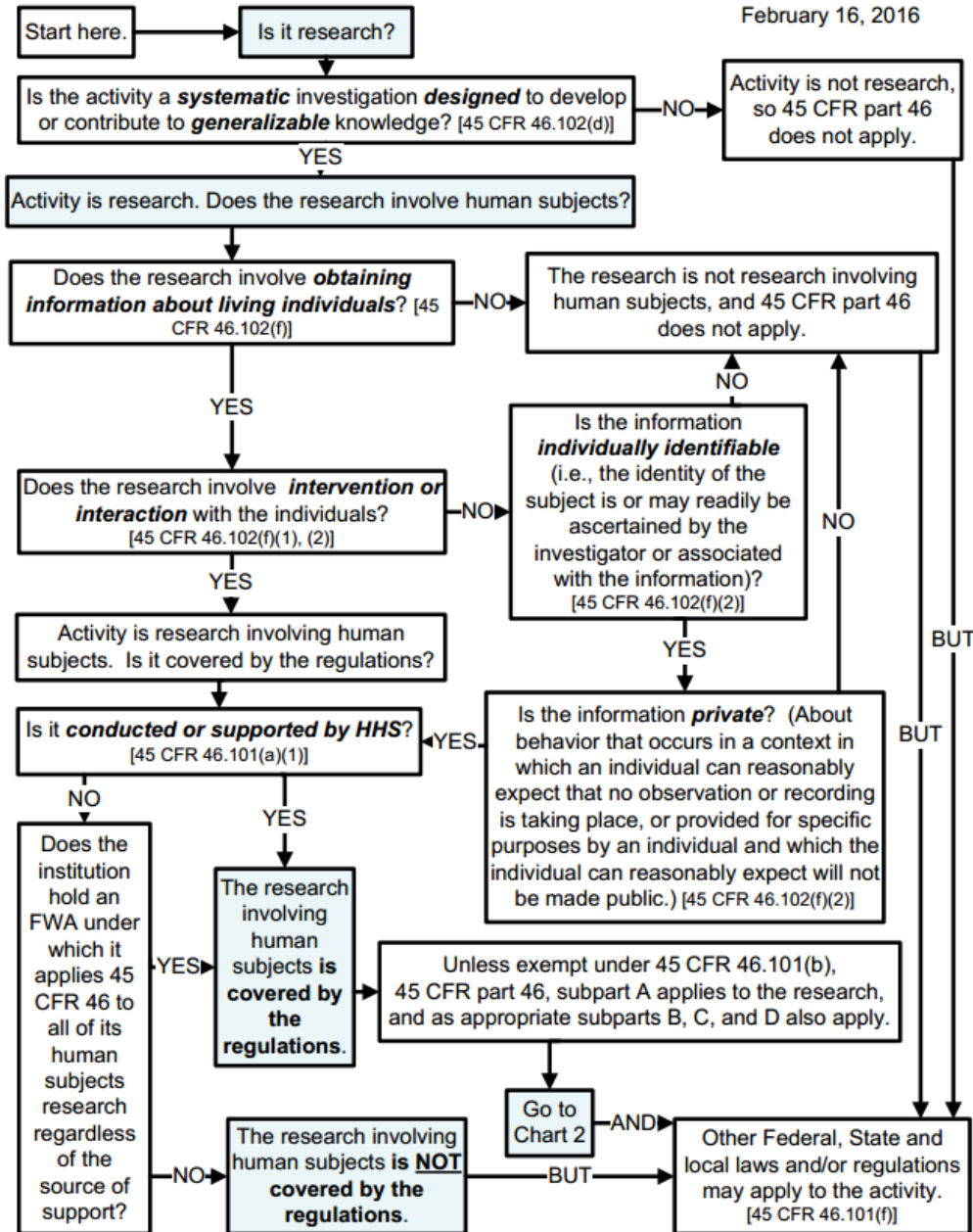
Appendix A - Human Subject Regulations Decision Chart

Chart 1: Is an Activity Research Involving Human Subjects Covered by 45 CFR part 46?

February 16, 2016

Start here. → Is it research?

Is the activity a *systematic* investigation *designed* to develop or contribute to *generalizable* knowledge? [45 CFR 46.102(d)] —NO→ Activity is not research, so 45 CFR part 46 does not apply.

YES

Activity is research. Does the research involve human subjects?

Does the research involve *obtaining information about living individuals*? [45 CFR 46.102(f)] —NO→ The research is not research involving human subjects, and 45 CFR part 46 does not apply.

YES

Does the research involve *intervention or interaction* with the individuals? [45 CFR 46.102(f)(1), (2)] —NO→ Is the information *individually identifiable* (i.e., the identity of the subject is or may readily be ascertained by the investigator or associated with the information)? [45 CFR 46.102(f)(2)]

NO

YES

Activity is research involving human subjects. Is it covered by the regulations?

Is it *conducted or supported by HHS*? [45 CFR 46.101(a)(1)] ◄YES— Is the information *private*? (About behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, or provided for specific purposes by an individual and which the individual can reasonably expect will not be made public.) [45 CFR 46.102(f)(2)]

YES

NO

YES

Does the institution hold an FWA under which it applies 45 CFR 46 to all of its human subjects research regardless of the source of support? —YES→ The research involving human subjects **is covered by the regulations**.

—NO→ The research involving human subjects **is NOT covered by the regulations**.

Unless exempt under 45 CFR 46.101(b), 45 CFR part 46, subpart A applies to the research, and as appropriate subparts B, C, and D also apply.

Go to Chart 2 —AND►

—BUT—

BUT

BUT

Other Federal, State and local laws and/or regulations may apply to the activity. [45 CFR 46.101(f)]

Appendix B – List of Competencies Met in Integrative Learning Experience

Wright State Program Public Health Competencies Checklist

Assess and utilize quantitative and qualitative data.
Apply analytical reasoning and methods in data analysis to describe the health of a community.
Communicate public health information to lay and/or professional audiences with linguistic and cultural sensitivity.
Demonstrate ethical standards in research, data collection and management, data analysis, and communication.

Concentration Specific Competencies Checklist

Health Promotion and Education:	
Area 4: Conduct Evaluation and Research Related to Health Education	
4.3	Assess the merits and limitations of qualitative and quantitative data collection for research
4.4	Critique existing data collection instruments for research
4.6	Develop data analysis plan for research
4.9	Disseminate research findings through professional conference presentations