Youth Violence and Mental Health in Times of Uncertainty

Evidence from the Eastern Mediterranean Region

CUMULATIVE DISSERTATION THESIS

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submitted by

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List of abbreviations

CI	Confidence interval
CRS	Centrality of Religiosity Scale
CVE	Community violence exposure
EMR	Eastern Mediterranean Region
et al.	et alia
GBD	Global burden of disease
GHQ	General Health Questionnaire
GSHS	Global School-based Student Health Survey
OPT	Occupied Palestinian territories
OR	Odds ratio
PD	Psychological distress
PSS-SR	PTSD Symptom Scale-Self Report
PTSD	Post-traumatic stress disorder
SLT	Social learning theory
SECV	Survey of Exposure to Community Violence
UAE	United Arab Emirates
UK	United Kingdom
UNRWA	United Nations Relief and Works Agency
WHO	World Health Organization

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List of scientific papers forming the basis of this thesis

I. **Itani, T**., Fischer, F., and Chu, J. J. (2017). The lifetime prevalence of exposure to community violence among Lebanese university students: association with behavioral and mental health correlates. *International Journal of Adolescence and Youth*, 1-9. doi:10.1080/02673843.2017.1337585

II. **Itani, T**., Fischer, F., Chu, J. J., and Kraemer, A. (2017). The prevalence of violent behavior among Lebanese university students: association with behavioral and mental health factors. *American Journal of Health Behavior*, 41(6):693-700.

III. **Itani, T**., Fischer, F., and Kraemer, A. (2017). Gender moderates the association between polyvictimization and suicidal ideation among adolescents in the United Arab Emirates. *International Journal of Adolescence and Youth*, 1-10. http://dx.doi.org/10.1080/02673843.2017.1377089

IV. **Itani, T**., Jacobsen, K. H., and Kraemer, A. (2017). Suicidal ideation and planning among Palestinian middle school students living in Gaza Strip, West Bank, and United Nations Relief and Works Agency (UNRWA) camps. *International Journal of Pediatrics and Adolescent Medicine*, 4(2):54-60.

Abstract

Background and objectives

Youth violence is a major global public health problem as it is a significant contributor to the global burden of disease due to its debilitating physical and mental health effects. While the correlates of youth violence have been extensively investigated in developed countries, the evidence is still scarce in the Eastern Mediterranean Region (EMR). This thesis aims to bridge this research gap by determining the prevalence and behavioural and mental health determinants of violence exposure in EMR and discuss these findings from the perspective of violence prevention.

Methods

The cumulative dissertation relies on various methods from four publications. Primary and secondary data were used to address the research questions and various analytical methods were used. All papers utilized a cross-sectional design, albeit with different sampling methodologies.

Results

The prevalence of witnessing violence and violence victimization among Lebanese university students was 70.3% and 49.1%, respectively in a sample of 450 students. Community violence exposure was significantly associated with psychological distress. Overall, 12.7% of the sample reported weapon carrying and 19.1% reported physical fighting. Both violent behaviors were more common in male students and were associated with other risky behaviors. Religiosity appeared to have a significant protective effect against engaging in physical fighting. The prevalence of polyvictimization among Emirati school adolescents (N=2,520) was 10.5%. Gender was found to be a significant effect modifier of the association between polyvictimization and suicidal ideation. The overall prevalence of suicidal thinking among Palestinian adolescents (14,303) was 25.6%. Males were more likely than females to report suicidal thinking. Furthermore, poor mental health, substance use, victimization, and perceptions of limited parental support were significant predictors of suicidal thinking.

Conclusion

This cumulative dissertation provides a distinctive contribution to the literature concerning the relationship between youth violence and mental health in EMR. Nonetheless, this research

effort should be complemented by further evidence to confirm its findings and improve its generalizability. National governments in EMR are encouraged to use the information highlighted in this synthesis paper to combat youth violence and alleviate the suffering of those afflicted by its burden. Resources to prevent youth violence are scarce, so it is imperative that interventions are driven by evidence and target individuals, families and communities most at risk of becoming involved in youth violence.

1. Introduction

Intentional injuries, a combination of violence and self-harm, have a rapidly increasing burden in the Eastern Mediterranean Region (EMR) mainly to the unrest in this region (GBD 2015 Eastern Mediterranean Region Intentional Injuries Collaborators and Mokdad, 2017) (Figure 1). Violence, a main component of intentional injuries, is a global public health problem that jeopardizes the physical and mental well-being of millions around the world. Depending on the characteristics of those perpetrating the violent act, the World Health Organization (WHO) divides violence into three broad categories: (1) self-directed violence, (2) interpersonal violence, and (3) collective violence (WHO, 2002). Interpersonal violence committed by young people is considered as youth violence. The current cumulative dissertation will specifically focus on the latter form of interpersonal violence while touching upon collective violence.

From a public health perspective, the ultimate goal is to curb violence before it starts, i.e. violence prevention. According to the Global Status Report on Violence Prevention, national governments are responsible for addressing violence in their respective countries (WHO, 2014). Despite the scale of deaths and the other debilitating effects of violence, there is a significant lack of data even at the basic levels such as usable and specific data on homicide and demographics of victims and perpetrators (WHO, 2014). Moreover, understanding the contextual determinants of youth violence is important to projecting its economic burden and future demands on public services and to tailoring anti-violence policies (WHO, 2014).

As compared to the other regions of the world, the EMR is experiencing a much faster increase of violence rates (GBD 2015 Eastern Mediterranean Region Intentional Injuries Collaborators and Mokdad, 2017). However, most of the research on specific types of violence has been concentrated in developed countries which limits its utility in developing countries. This highlights the importance of researching violence in EMR to understand the surge of violence, explore its potential health consequences, and provide local governments with specific and relevant recommendations for violence prevention.

Today many people living in some Middle Eastern countries are exposed to multiple facets of violence. The most prominent one is Syria, where the Syrian civil war has been affecting countless lives and has spilled over into neighboring countries. Similarly, Lebanon has had its own experience with civil war and is currently affected by the Syrian crisis. This is mainly due to the recurring violent events on Lebanese soil and the debilitating accompanying

refugee crisis whereby Lebanon currently hosts the largest per capita refugee population in the world (UNHCR, 2017).

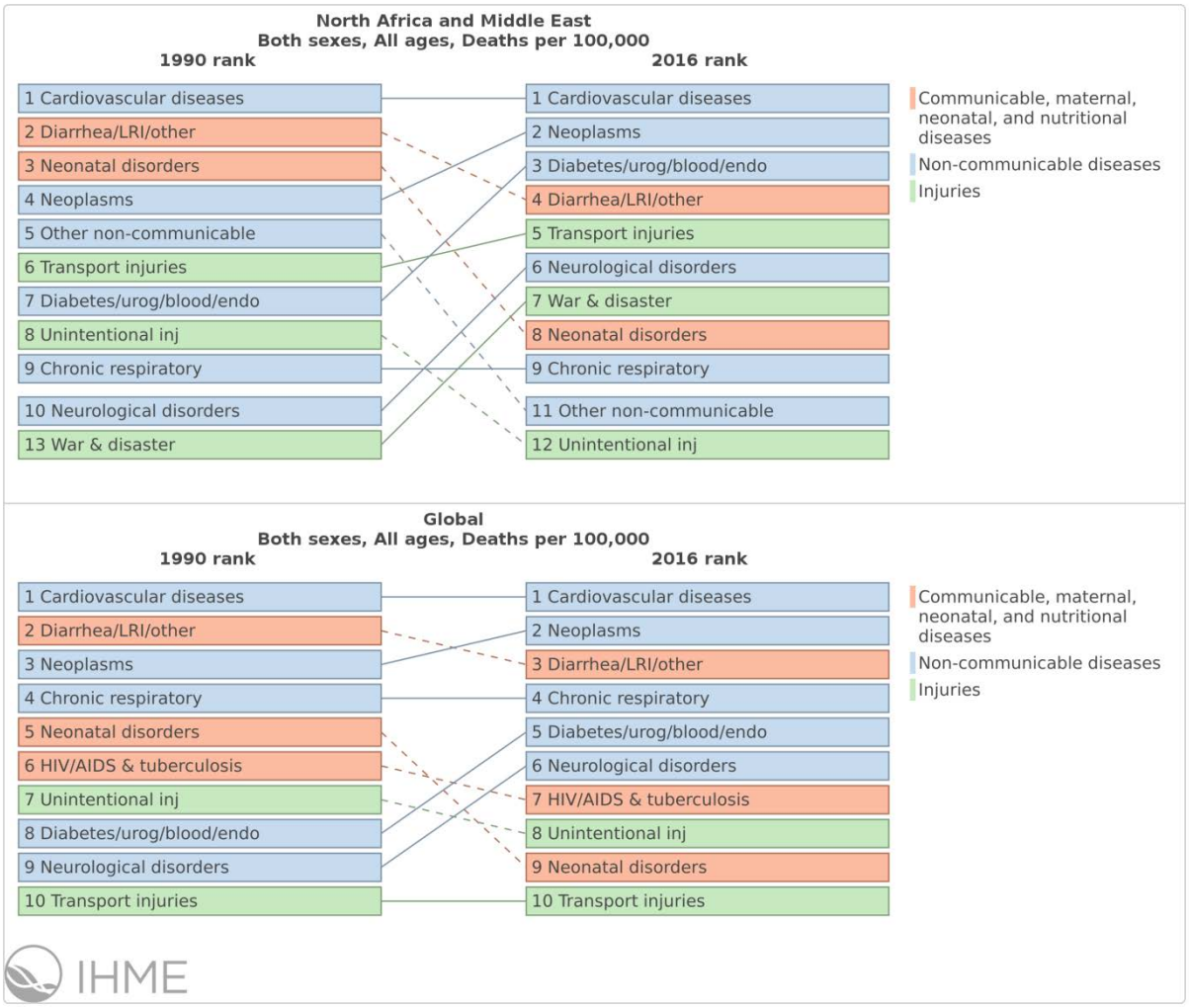

Figure 1: The change in rankings of major causes of Global Burden of Disease (deaths per 100,000) between 1990 and 2016 in EMR and globally

The current synthesis paper thrives to provide evidence-based research about the prevalence and mental health effects of youth violence in several settings within EMR and to critically discuss its implications for violence prevention in light of the present conflict milieu.

The content of the cumulative dissertation is based on the following four papers:

I. **Itani, T**., Fischer, F., and Chu, J. J. (2017). The lifetime prevalence of exposure to community violence among Lebanese university students: association with behavioral and mental health correlates. *International Journal of Adolescence and Youth*, 1-9. doi:10.1080/02673843.2017.1337585

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2. Background about the EMR

According to the WHO, the EMR is comprised of 22 member states and the occupied Palestinian territory (OPT) (West Bank and Gaza Strip). The region has a population of almost 583 million people, and the official languages of the WHO in the EMR are Arabic, English and French. For the purposes of this study, the countries of Lebanon, United Arab Emirates (UAE), and the OPT were studied. These were particularly selected since they offer the chance to compare heterogeneous countries in terms of wealth, demographics, and conflict history.

Lebanon, an upper middle income country in EMR, has a population of about six million and currently has the largest per capita population of refugees in the world. Over half of the population are below 30 years old (CAS, 2009). It is bordered by Syria to the north and east and by Israel to the south. Lebanon was in a period of prosperity when the country was struck by a debilitating intersectarian civil war between Christians and Muslims which lasted from 1975 to 1990. That war entailed fighting among various ethnic-religious groups and resulted in the death or injury of 17% and the emigration of around one-third of the population. More recently, the country has experienced multiple bombings and a chain of political assassinations that started in 2005. Then after a period of relative stability, the month-long Israeli-Hezbollah war erupted in 2006 and as a result more than 1,000 Lebanese civilians lost their lives. Furthermore, and after one year and a half of political crisis, the country witnessed an internal strife in May 2008. Since the beginning of the Syrian civil war in 2011, Lebanon has been affected by terrorist attacks especially in areas surrounding its borders with Syria. Overall, these conflicts held back Lebanon's economic development and have adversely

affected all aspects of living including health, infrastructure, and environmental sanitation (Hamdan, 2002).

The UAE, a high income country in EMR, has an estimated population of over 9 million (most of which are expatriates) (World Bank, 2017). The country is located in the southeast of the Arabian Peninsula, and borders Oman to the east, Saudi Arabia to the south and shares a sea border with Qatar and Iran. While Islam is the official religion of the UAE, the country advocates for freedom of religion in light of its large influx of migrant workers from other nations. The UAE's economy is considered the second largest in the region and remains mostly reliant on oil exports.

The term OPT refers to the land that has been occupied by Israel since the Arab-Israeli war in 1967; primarily in the West Bank and the Gaza Strip. Due to the intractable conflict and Israeli occupation, the nearly 4.5 million Palestinians who are living in the OPT do so in urban camps where many of them fear for their safety and are subject to harsh living and economic conditions. The majority of the population in OPT are Muslims and under 15 years old (World Bank, 2016).

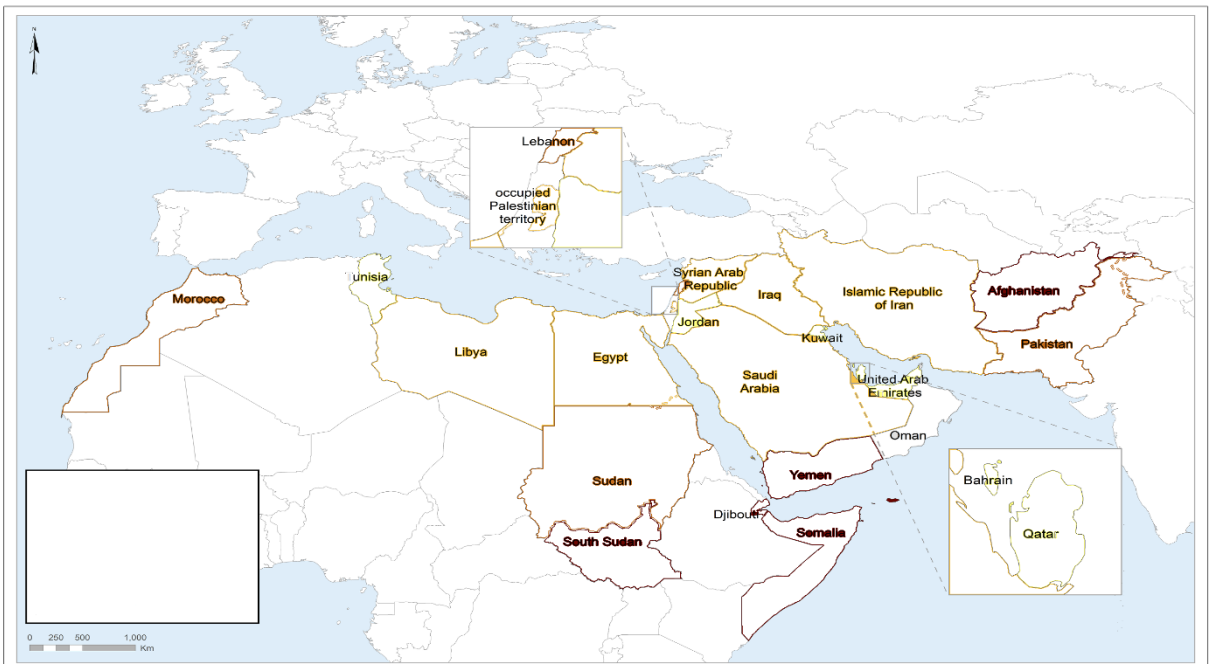

Figure 2: Map of the EMR

3. Youth violence

3.1 Definition

In order to effectively monitor the incidence of youth violence, investigate its risk and protective factors, and examine its trends across different geographical regions and time points, a clear and consistent definition is required. Violence as defined by the World Health Organization (WHO) is “the intentional use of physical force or power, threatened or actual, against oneself, another person or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.” (WHO, 2002). Youth violence disproportionally involves young people aged 15-29 years who intentionally use physical force to threaten or harm others. This violent behavior includes physical fights, bullying, threats with weapons, and gang-related violence. It is worth noting that young people can be entangled with youth violence as victims, offenders, or witnesses (WHO, 2002).

3.2 Epidemiology

Mortality data indicate that youth violence is the leading cause of death in this group (WHO, 2011). Violent behavior in youth is often studied with a particular focus on three key exposures: physical fighting, weapon carrying, and bullying (Escobar-Chaves et al., 2002; Herrenkohl et al., 2000; Ellickson et al., 2000). Physical fighting, a common expression of violence, is an assaultive behavior that is a significant public health issue among young people globally. It is estimated that the prevalence of physical fighting among adolescents was around 10% based on the pooled estimates from 79 countries. Weapon carrying among youth, a sign of violent behavior, can lead to serious injuries and death. Previous studies concerning the prevalence of weapon carrying among university students from developed and developing countries ranged from 6% to 8.5% (Dinger et al., 2014; Peltzer and Pengpid, 2014). Bullying is defined as an aggressive behavior that involves the systematic misuse of power leading to a state of power imbalance between the victim and the perpetrator (Farrington, 1993). Bullying is common among youth, particularly in educational settings and includes different forms such as cyberbullying, physical violence, verbal harassment, and social exclusion (Carney, 2000). A meta-analysis of cross-sectional surveys between 2003 and 2011 across different world regions found that about 30% of adolescents reported bullying victimization (Elgar et al., 2015).

3.3 Risk and protective factors

Youth violence is a preventable public health problem and can be addressed through researching the modifiable factors that influence the likelihood of youth violence perpetration. Scientific reviews document two broad classes of factors: risk factors and protective factors. Major risk factors for youth violence included gender, risky behavior, and witnessing violence. Studies around the world have shown that males are up to three times more likely than females to engage in physical fights. A study focusing on inner-city violence found that males were more likely than females to witness violence and experience physical assault (Haj-Yahia et al., 2011).

Another risk factor that assumes a key role in youth violence is alcohol consumption. Since alcohol use directly affects cognitive and physical function, its consumption in a hazardous fashion can limit self-control and risk assessment. Hence, certain drinkers are more likely perpetrate acts of violence (Room et al., 2005). In the UK, a national study revealed that youth belonging to the age group 18-24 years who binge drink have a four-fold risk to commit criminal activities and almost five times at risk to engage in a group fight in public than habitual drinkers. It is estimated that 20% of all violence in the UK occurs in clubs or within a close proximity to such places and that the majority of these incidents were connected to alcohol (Richardson and Budd, 2003). A study from the Middle East found that binge drinkers (consuming five or more drinks per occasion) were more likely to engage in bullying, physical fighting, and weapon carrying (Molcho et al., 2004).

Youth violence is tightly bonded with other categories of violence such as witnessing domestic violence and armed conflicts. Studies have reported that children who are exposed to domestic violence are more likely to display aggression and emotional disorders. Moreover, the scientific evidence suggests that more exposure of violence domestically and in the society is associated with violent behaviors in young adolescents (O'Keefe, 1997). Moreover, the incidence of youth violence is amplified with protracted exposure to armed conflicts, contributing to a universal culture of fear and terror (Exadaktylos et al., 2010). On a different note, the impact of violence depiction in the mass media on violent youth behavior should not be underestimated. A meta-analysis about the effects of violent video games on youth aggression revealed a significant correlation (Anderson and Bushman, 2001).

The problem of youth violence is recognized as both a physical and a psychological health issue across the globe, especially in developing countries. The situation is particularly serious in countries where political violence is recurrent since the youth adapts violence from the

prevailing milieu. Overall, the atmosphere of fear and violence may damage the psychological health of young people (World Bank, 2011).

It is worth mentioning that youth violent behavior rarely results from a sole cause; rather, a multitude of factors congregating over time contributes to such behavior (Huesmann, 2007). Moreover, risk models fail to explain why individuals with high-risk background steer away from violence. For instance, studies have reported that a proportion of high-risk children do not follow an antisocial pathway later in life, suggesting an interplay of protective factors (Hall et al., 2012). Protective factors could potentially either reduce the possibility of violent behavior or buffer its harmful effects in the presence of certain risk factors. Direct protective and buffering factors empirically identified in the literature include close relationships with parents, medium socioeconomic status, having non-deviant friends, and living in non-violent communities (Lösel and Farrington, 2012). Additionally, a mounting body of evidence suggests that religiosity might have a protective effect on youth antisocial behavior. For instance, religion was found to have a moderately negative effect on criminal behavior in a meta-analysis of 60 studies conducted between 1962 and 1998. It was argued that religiosity affects criminal behavior through its inhibitory influence as an institution of social control, and/or through its indirect effect on peer networks (Baier and Wright, 2001). Nevertheless, the contemporary evidence on the association between youth religiosity and violence is fairly underdeveloped (Salas-Wright et al., 2014).

3.4 Mental health consequences

Youth violence cannot be studied without the consideration of a wider array of factors that are usually associated with youth violent behavior such as mental health. The literature suggests that delinquent youths have disproportionally higher rates of mental illness than the general population (Teplin et al., 2002). Common consequences of youth violence exposure include psychological distress (PD), post-traumatic stress disorder (PTSD), and suicidal ideation.

PD is a common mental health problem that involves multiple levels of anxiety, depression, or their combinations, and can be caused by biomedical, psychological, or social conditions (Roberto et al., 2006). PD could be screened when eligible individuals for the 12 items of the General Health Questionnaire (GHQ-12) score three or more points thus considered “psychologically distressed” (Goldberg et al., 1997). Among youth, university students are exposed to high levels of PD, partly due to the increased pressure on them to achieve more academically. A 12-nation study conducted among university students revealed that more than half of the students had probable PD (Eskin et al., 2016). The association between youth

violence and PD has been previously established. A meta-analysis of 50 studies concluded that there was a clinically significant deleterious effect of youth violence on PD (Weaver and Clum, 1995).

PTSD is a mental disorder that may be triggered by a single or repeated exposure to traumatic events (Bisson et al., 2015). Lifetime prevalence of PTSD ranges between 1.9% and 8.8% (Alonso et al., 2004), however, this could be significantly higher among people exposed to conflict (Steel et al., 2009). This mental disorder is characterized by three main types of symptoms: (1) re-experiencing the trauma, (2) emotional numbness, and (3) increased arousal (Bisson et al., 2015).

The association between CVE and PTSD among youth has been documented (Fowler et al., 2009; Turner et al., 2013). For instance, a study conducted among young adults (aged 18–22 years old) found that CVE predicted increased scores of PTSD (Scarpa et al., 2006). A similar study among college students reported a positive association between CVE and depressed mood (Haden and Scarpa, 2008). Additionally, a study conducted among university students in Pakistan showed that CVE was associated with probable PTSD (Khan et al., 2016). The hypothesized link between CVE and mental health could be explained by the stress theory, which designates CVE as a 'stressor' predicting maladaptive outcomes (Trickett et al., 2003).

Suicidal ideation, the serious thought about killing oneself, is a precursor to suicide attempts and hence is often identified in epidemiological studies as arguably an effective mean of early intervention for the prevention of suicide (Kessler, 1999). A study conducted among adolescents in 32 low- and middle-income countries showed that the pooled 12-month prevalence of suicidal ideation was 16.2% (McKinnon et al., 2016). Furthermore, the prevalence of suicidal ideation among 5,572 university students from developed and developing countries was 29% (Eskin et al., 2016). Previous studies have linked suicidal ideation to youth violence. For instance, a study conducted among students aged 13-17 years reported an association between suicidal ideation and victimization (exposure to bullying and physical assault) (McKinnon et al., 2016).

A conceptual framework linking risk and protective factors of youth violence with selected mental health outcomes is provided in Figure 1. This was developed on the basis of the relevant literature with consultation from field experts. The conceptual framework was then used to guide the analyses by postulating a hierarchical relationship between different groups of factors and suicidal ideation among young people. For instance, the conceptual model

formed the basis for assessing the effect of various factors as direct or mediated or confounded by other factors (Pillai et al., 2009).

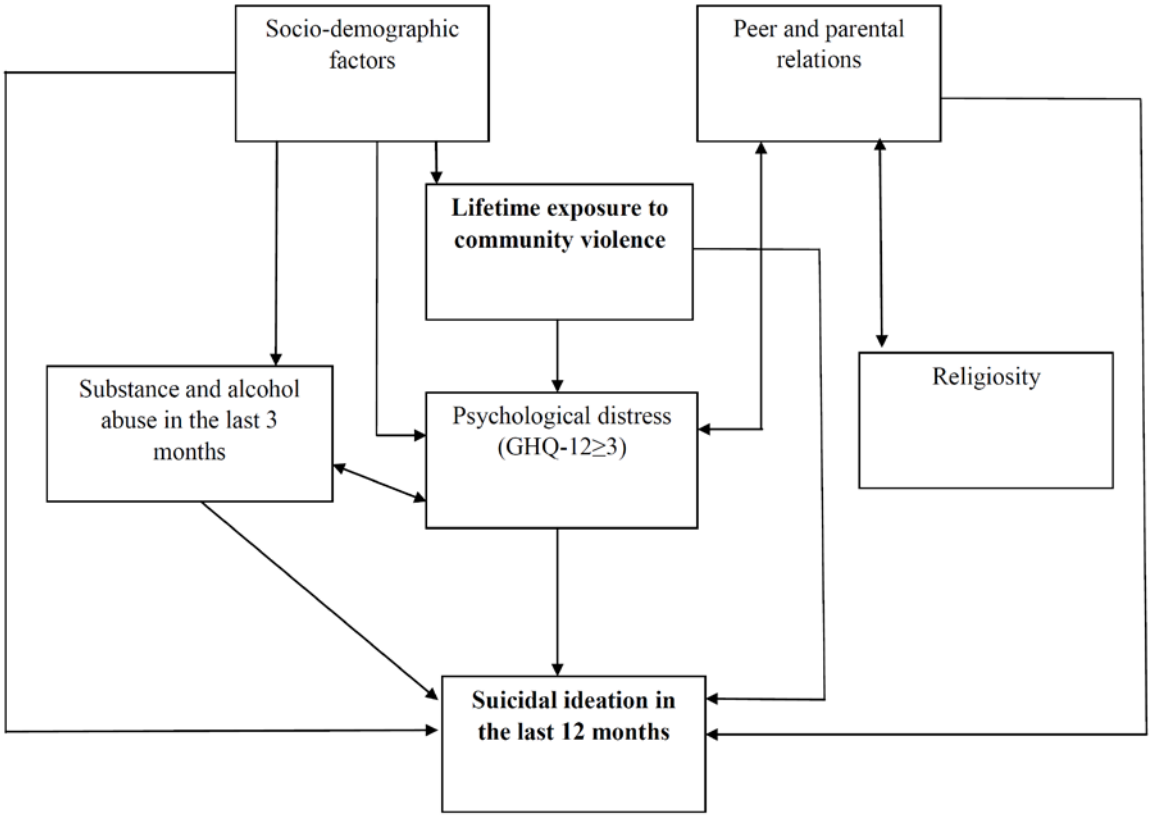

Figure 3: Conceptual framework for the identification of protective and risk factors of youth violence and its relation with selected mental health outcomes (Pillai et al., 2009)

4. Theories on Violence

It is widely accepted that traditional theories on violence tend to explain violent behavior in a basic and one-dimensional fashion. As a result, the societal component of violence is undermined (Barak, 2003). Baring the latter in mind, several conventional theories that are deemed relevant to this study are discussed below. These theories shed light on potential causes of youth violence from the individual, family, peer, and societal spheres.

4.1 Social Learning Theory

The social learning theory (SLT) is considered of being the most relevant to violent behaviors among behavior theories (Bandura, 1977). Originally derived from the work of Albert Bandura, this theory regards that aggressive behavior is learned in the course of the process of observational learning. Furthermore, this theory considers that an individual learns by

observing and imitating other individuals. Bandura explains that learning would be difficult and hazardous if individuals had to depend on the consequences of their actions to gain insight on how to behave (Bandura, 1977). Researchers have applied this theory to better comprehend aggression and mental health disorders. Bandura then centered his research on the concept that individuals are more likely to engage in certain behaviors when they believe that the outcome of their behaviors is in fact positive. This concept is dubbed “self-efficiency”.

4.2 General Strain Theory

The strain theory has been used to explain deviant behavior and its association with crime. Theorists support that most people have an aspiration to attain achievements, but based on the pressures from society, they may opt to breach laws to fulfill their needs. In the youth setting, individuals already under strain from their peers, compete to actualize approval and acceptance. Failing to attain a reputable status, the youth then turn to deviant behavior to obtain recognition (Agnew, 2001).

4.3 Social Disorganization Theory

The social disorganization theory states that crime rates vary across communities with lenient versus strict values towards social control (Sampson and Groves, 1989). Factors such as poor infrastructure and high residential turnover may cause residents of these neighborhoods to be less likely to conform to prosocial standards. The social disorganization theory was tested by researchers in a number of studies over the years. One study examining the association between social and economic disadvantage in Chicago found that neighborhood disadvantage predicted the incidence of violent crimes (Sampson et al., 1997). Other studies concluded that neighborhoods with high crime rates were often characterized by economic deprivation, high transit rates and racial/ethnic heterogeneity (Gibson, 2012; Harding, 2008; Elliot et al., 1996).

4.4 Control Theory

The social control theory poses the question, “Why don’t people break the law?” instead of the common approach, “Why do people break the law?". Social control theorists suppose that all individuals have the capability of being deviant and committing violent crimes. They further argue that individuals would act out their most primitive tendency of perpetrating a violent act if left to their own values, beliefs, and behaviors (Hirschi, 1969).

4.5 Bio-Ecological Theory

Although many traditional and integrative theories on violence exist, for purpose of this study, violence should be viewed from a Bio-Ecological Systemic perspective. This integrative theory would consider a wide array of factors that influence the development of violent behavior over a period of time. This theory integrates the intrinsic biological factors within individuals and provides for the critical developmental influence of all those factors in a life-course approach (Bronfenbrenner, 1979).

It is argued that the ecological issues are at the hub of worries about violence, predominantly in low-income urban communities (Astor et al., 1996). This theoretical framework is based on Bronfenbrenner's Ecological Theory which consists of four interacting, embedded systems: micro-, meso-, exso- and macrosystems (Thomas, 2005).

The microsystem encompasses the association between the developing individual and the patterns of activities, roles and internal relationships in homes, schools and peer settings. At a microsystem sublevel (home or peer), there exists a pattern of perceived activities that the child experiences and relates to. This internally experienced environment plays a far important role that the real environment and therefore the way the child interprets his experiences does navigate his behavior. A child's development is either promoted or hindered depending on the interactions he has at the microsystem level. The components of this microsystem are dependent on each other and thus the alteration in one part will have a corresponding effect on the other parts of the system (Thomas, 2005).

A *mesosystem* includes the linkages and processes occurring between two or more of the microsystems, for instance, the family, the school and the neighborhood (Thomas, 2005).

The *exosystem* comprises other systems which indirectly may influence the people who have proximal relationships with the child at the microsystem level, such as a parent's workplace (Donald et al., 2006).

The *macrosystem* is composed of all the above-mentioned systems of the youth environment. It involves dominant social and economic structures as well as social values such as, obeying authority and respecting senior members of the community (Donald et al., 2006).

The *chronosystem,* which is often excluded in the literature, refers to the developmental time periods, which intertwine through the interactions between these systems and their control on individual development. For instance, the developmental process which a family goes through

differs when a child in that family is also undergoing a developmental process (families with babies versus those with teenagers) (Donald et al., 2006).

5. The public health approach for violence prevention

It is well-known that public health is concerned with preventive rather than curative aspects of health and deals with health issues on a population-level (Gullotta and Bloom, 2014). The public health approach has its roots in the science of epidemiology and its branches in multidisciplinary sciences (WHO, 2002). The public health approach for violence prevention provides an important framework for comprehending the complex interplay of causes and consequences of violence as well as addressing the underlying risk factors and potentiating the protective factors. Moreover, this approach guides violence prevention through policy interventions and advocacy at different levels; i.e. primary prevention, secondary prevention, and tertiary prevention (WHO, 2002). The public health approach mainly consists of three steps (Figure 4).

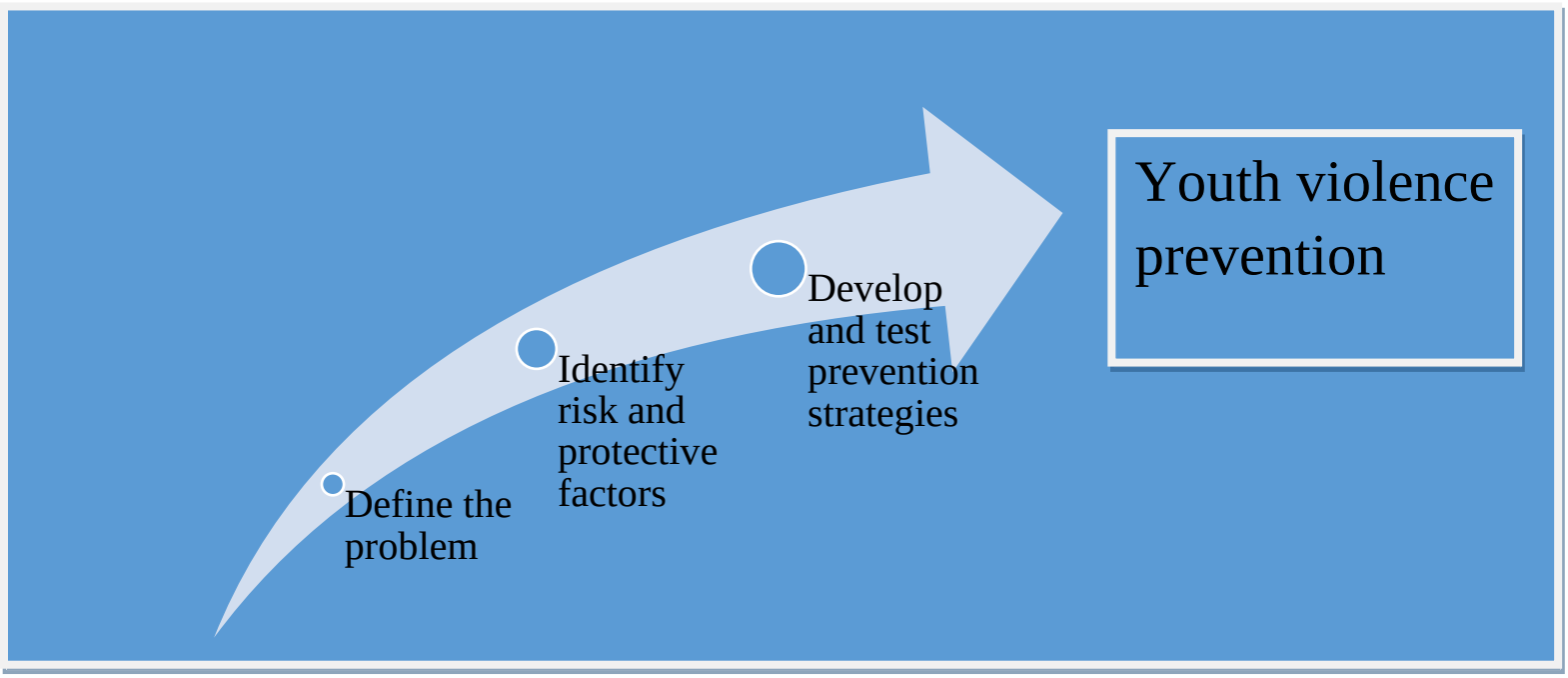

Figure 4: The public health approach to violence prevention (Mercy et al., 1993)

6. Objectives

Based on the aforementioned literature review, there is a research void concerning youth violence and its correlates in EMR. Much of the available evidence has focused on domestic violence such as child maltreatment and intimate partner violence (Altamimi et al., 2017; Usta et al., 2007). Hence more research about the prevalence of youth violent behaviors and their

correlates is warranted in this region. The current synopsis aims to contribute to this end by synthesizing the evidence that was produced from the four publications and discuss its implications for violence prevention. The research papers included in this cumulative dissertation present different dimensions of youth violence and its determinants in adolescents (13-17 years) and emerging adults (18-24 years). More specifically, Paper I and II target the mental health effects of individual violent behaviors among university students, while Paper III reports on the association between polyvictimization and suicidal ideation in adolescents. Finally, Paper IV sheds light on suicidal ideation among adolescents living in an active conflict setting. Implicitly, this evidence originated from low-income (Occupied Palestinian territories), middle-income (Lebanon), and high-income (United Arab Emirates) countries.

7. Specific research questions

1. What is the prevalence of CVE among Lebanese university students?
2. What are the behavioral and mental health factors that are associated with CVE among Lebanese university students?
3. What is the prevalence of physical fighting and weapon carrying among Lebanese university students?
4. Are mental health factors such as PD and PTSD correlated with physical fighting and weapon carrying among Lebanese university students?
5. What is the prevalence of polyvictimization among Emirati adolescents?
6. Is polyvictimization associated with an increased likelihood of suicidal ideation among Emirati school students?
7. Does gender moderate the association between polyvictimization and suicidal ideation in Emirati adolescents?
8. What is the prevalence of suicidal thinking among adolescents living in the OPT and in UNRWA camps in neighboring countries?

8. Methods

Primary (Papers I and II) and secondary (Papers III and IV) data were used to address the research questions on this synopsis and various analytical methods were used. All papers utilized a cross-sectional design, albeit with different sampling methodologies. An in-depth description of the different methods is provided in each paper. Additionally, an overview of the objectives, research questions, and analyses strategies for all papers is presented in Table 1.

Table 1: An overview of the objectives, research questions, and analyses strategies for all papers

Paper	Objectives	Research questions	Analyses strategies
Paper I	To estimate the prevalence and types of CVE and its behavioral and mental health correlates among Lebanese university students	-What is the prevalence of CVE among Lebanese university students? -What are the behavioral and mental health factors that are associated with CVE among Lebanese university students?	-Descriptive statistics -Bivariate analysis using chi-squared tests -Adjusted multivariable logistic regression models
Paper II	To estimate the prevalence of weapons carrying and physical fighting, to determine the health risk correlates of violent behavior, and to investigate the potential mental health factors related to violent behavior among Lebanese university students	-What is the prevalence of physical fighting and weapon carrying among Lebanese university students? -Are mental health factors such as PD and PTSD correlated with physical fighting and weapon carrying among Lebanese university students?	-Descriptive statistics -Bivariate analysis using chi-squared tests -Adjusted multivariable logistic regression models
Paper III	To explore the association between polyvictimization and suicidal ideation while considering the potential moderating effect of gender on that association among Emirati adolescents	-What is the prevalence of polyvictimization among Emirati adolescents? -Is polyvictimization associated with an increased likelihood of suicidal ideation among Emirati school students? -Does gender moderate the association between polyvictimization and suicidal ideation in Emirati adolescents?	-Descriptive statistics -Gender-stratified cross-tabulations -Multivariable logistic regression model with an interaction term
Paper IV	To identify the prevalence and correlates of suicidal thinking among Palestinian middle school students	What is the prevalence of suicidal thinking among adolescents living in the OPT and in UNRWA camps in neighboring countries?	-Complex samples analysis -Random-effects model for meta-analysis -Multivariable logistic regression model

Primary data were collected from a sample of Lebanese university students (n = 450) using a proportionate cluster sampling technique to ensure representativeness by academic major (stratum). A list of classes (clusters) that were being offered at the time of data collection was obtained and a random selection of those classes was then made. The university where the data collection was conducted is located in Beirut, Lebanon and is considered to cater to students from different religions and socio-economic backgrounds. Ethical approval was obtained from the Committee on Human Subjects in Research. After asking for the permission of professors and lecturers, the research team accessed the classes and asked the students for their verbal approval to participate in the study. Information about the background and objectives of the study was provided. Anonymity, confidentiality and voluntary participation were clearly stressed. Self-administered anonymous questionnaires

were distributed to students who agreed to participate. None of the professors or lecturers refused to allow recruitment in their classrooms. The response rate among students enrolled in sampled classes was 96%.

Secondary data used in this cumulative dissertation originated from the Global School-based Student Health Survey (GSHS). Full details about the methodology were provided elsewhere (WHO, 2017). In brief, this was a cross-national comparative study aimed at examining the health and risk behaviors of adolescent students primarily aged 13-17 years. The GSHS implemented a two-stage cluster sampling design to produce nationally representative data on school-going students (13-17 years) in the respective countries. At the first stage, schools were selected with probability proportional to enrollment size. At the second stage, classes were randomly selected and all students in selected classes were eligible to participate.

8.1 Paper I

This paper intended to determine the prevalence and correlates of CVE among Lebanese university students (N=450). The questionnaire included sections related to socio-demographic characteristics, behavioral factors, mental health, and violence. These were carefully selected based on previous studies and later refined based on feedback from the pilot study. The main dependent variable considered for these analyses was CVE. This was measured using an adapted version of the Survey of Exposure to Community Violence (SECV) (Richters and Saltzman, 1990). This scale has been structured to measure lifetime CVE. The SECV is a commonly used measure of CVE with adults and had acceptable estimates of internal consistency with diverse samples (DeCou and Lynch, 2017).

The independent variables included socio-demographic variables (age, sex, residence, household income, and employment), behavioral factors (tobacco smoking, alcohol drinking in the course of the last three months, binge drinking, and ever having sexual intercourse), and mental health factors (PD and PTSD). PD was measured using the GHQ-12 and PTSD was measured using the 17-item PTSD Symptom Scale-Self Report (PSS-SR) (Foa et al., 1993).

Descriptive statistics were used to estimate the prevalence of CVE among Lebanese university students. Chi-squared tests were used to individually determine the factors associated with CVE. Multivariable logistic regression models were used to check whether the significant associations at the bivariate persisted after controlling for confounders.

8.2 Paper II

This paper aimed to estimate the prevalence of violent behaviors and explore its behavioral and mental health factors among Lebanese university students. The main dependent variables considered for this study were physical fighting (assessed in the last year) and weapon carrying (assessed in the last 30 days). The independent factors that were used in this study were similar to those in Paper I. Religiosity was explored as a potential factor and was assessed using the Centrality of Religiosity Scale (CRS) which is a measure of the centrality and importance of religious meanings in personality (Huber, 2003).

In addition to descriptive and bivariate statistics, two multiple logistic regression models were fitted to determine the significant determinants of weapon carrying and physical fighting. This was done by performing a backward logistic regression whereby all variables were included in a model as a first step, and then gradually, variables with the highest p-values were excluded, reaching a final model with only a set of significant variables.

8.3 Paper III

This paper tested whether the association between polyvictimization and suicidal ideation would be different for females as compared to males using secondary data from the UAE GSHS 2010 (WHO, 2010). This study included 2,520 students and the dependent variable for this study was suicide ideation, assessed in the last 12 months. The main exposure variable was polyvictimization which was constructed by combining the exposure to both bullying and physical attack.

To formally examine whether the association between suicidal ideation and victimization among school adolescents differed depending on gender, a multivariable logistic regression model with an interaction term was fitted. Sampling weights were applied to account for the multi-staged clustered sampling design.

8.4 Paper IV

This paper examined the prevalence of suicidal thinking and its related factors among Palestinian adolescents (N= 14,303) living in the OPT and in UNRWA camps. Suicidal ideation and planning were both assessed in the last 12 months. Students who answered both questions and marked a “yes” response for one or two of the two questions were considered to have expressed suicidal thinking during the past year. Students who answered “no” to both of these questions were coded as not having had suicidal thinking during the past year.

Complex samples analysis was used to account for the two-stage sampling method and to adjust for minor differences between participants and the Palestinian middle school population as a whole. Chi-square tests were used to examine the associations between suicidal ideation and/or suicidal planning and other variables. Pooled proportions and odds ratios along with their respective 95% confidence interval (CIs) were calculated using random-effects models.

9. Results

In this section, a summary of the main results based on a culmination of the specific research questions is presented.

9.1 Prevalence of youth violence in EMR

The prevalence of witnessing violence and violence victimization among Lebanese university students was 70.3% and 49.1%, respectively. The most common type of witnessing community violence was hearing gunfire, while the highest reported type of violence victimization was being threatened (Paper I). Overall, 12.7% of the sampled Lebanese university students reported weapon carrying and 19.1% reported physical fighting (Paper II), while the prevalence of polyvictimization among Emirati school adolescents was 10.5% (Paper III).

9.2 The determinants of youth violence in EMR

Male Lebanese university students were more likely to be victims of CVE (55.3% vs. 43.3%, $p = 0.011$) (Paper I) and to be engaged in both weapon carrying (20.7% vs. 5.2%, $p < 0.001$), and physical fighting (31.8% vs. 7.3%, $p < 0.001$). Furthermore, students who engaged in violent behaviors were more likely to have risky health behaviors than those who were not involved in violent behaviors (Paper II). After adjusting for potential socio-demographic confounders, alcohol binge drinking was the strongest correlate of CVE (Paper I). On the other hand, religiosity had a significant protective effect against engaging in physical fighting after adjusting for socio-demographic factors (Paper II).

9.3 The prevalence and determinants of suicidal behavior among adolescents in EMR

The prevalence of suicidal ideation among Emirati adolescents was 16.5% (Paper III) while suicidal thinking (either ideation or planning) was reported by one in four middle school student living in OPT and neighboring UNRWA camps. Males were more likely than females to report suicidal thinking. Furthermore, suicidal thinking was associated with poor mental

health (felt lonely, felt worried), substance use (used marijuana), victimization (was bullied, was physically attacked), and perceptions of limited parental support (lack of parental understanding) (Paper IV).

9.4 The association between youth violence and mental health in EMR

PD was significantly associated with both forms of CVE after accounting for potential confounders (Paper I). Moreover, students who considered suicide (aOR: 3.87, 95% CI: 1.83-8.18) or attempted suicide (aOR: 4.27, 95% CI: 1.63-11.20) were more likely to engage in physical fighting than students with no suicidal behavior after accounting for the sociodemographic variables (Paper II). Gender was found to be a significant effect modifier of the association between polyvictimization and suicidal ideation. Based on gender-stratified multivariable logistic regression models, victimized females had higher odds of reporting suicidal ideation than their male counterparts after adjusting for known confounders such as risk behavior and factors related to mental health, peer relations, and lack of parental understanding (Paper III).

10. Discussion

As outlined in the objectives of this synopsis, the main results will be discussed in light of their potential implications for youth violence prevention. The public health approach will be used to discuss the findings of this cumulative dissertation.

Hence, in each paper, the problem will be defined in the context of the literature, then the identified risk and protective factors will be discussed, and finally, practical youth violence prevention strategies will be suggested.

10.1 CVE and its associated factors

Previous studies about the prevalence of CVE among university students in EMR are lacking Paper I has contributed to defining this problem specifically in the Lebanese setting. Here, the evidence indicated that Lebanese university students have witnessed and experienced chronic cycles of community violence. The strongest risk factors of CVE that were identified in this study were alcohol binge drinking and tobacco smoking. These factors were also associated with violence exposure in previous studies among young adults (Björklund et al., 2010; Crane et al., 2013; Löfving–Gupta et al, 2015). Young adults exposed to community violence may resort to alcohol binge drinking and tobacco smoking to try to cope with their stressful situation as suggested by the general strain theory (Agnew, 2001).

Paper I also showed an association between CVE and PD. This association was consistently reported in the literature (Fitzpatrick and Boldizar, 1993; Kadra et al., 2014). However, due to the limitations of cross-sectional design, it is not possible to discern the temporal relation between violence exposure and the poor mental health outcome.

While protective factors for the relationship between CVE and mental health were not assessed in this study, the literature suggests that positive parental factors (good parental communication and supervision) could buffer the negative effects of CVE on mental health (McDonald et al., 2011).

The negative effects of CVE could further disrupt the behavioral regulation among young adults as it might reinforce the perception of violence as an effective problem-solving technique (Guerra et al., 2003) and compromise adult supervision of youth behavior (Sampson et al., 1997).

Primary violence prevention could be achieved by enforcing anti-violence rules and regulations in Lebanon. Violent offenders are rarely detained in Lebanon and victims of community violence are usually reluctant to contact authorities and when possible, they often take matters into their own hands. Safer communities breed less violence as compared to violent and unstable communities. At the level of secondary prevention, a program that paired students with adult mentors in high-risk communities has demonstrated favorable results (Lakind et al, 2015). Tertiary youth violence prevention strategies might include providing emergency accommodation of victims of violence at a reduced rate, counseling in the emergency departments, and directing both the victims and perpetrators of violence to relevant support groups.

10.2 Determinants of physical fighting and weapon carrying

The main findings of Paper II represented a unique contribution to defining youth violent behavior in Lebanon. On the one hand, it provided contemporary estimates of engagement in physical fighting and weapon carrying among Lebanese university students. On the other hand, it highlighted the correlations between these violent behaviors and risky and mental health factors within the framework of Problem Behavior Theory (Jessor, 1991). The prevalence of violent behavior in the current study was higher than what has been reported in similar settings. For instance, an analysis of data collected from 18,541 university students from 25 developing countries showed a 13% overall prevalence of physical fighting and about 6% rate of weapon carrying (Peltzer and Pengpid, 2014).

Findings were consistent with the literature (Sibai et al., 2009; Peltzer and Pengpid, 2014; Kann et al, 2016) and suggested that risky behavior such as alcohol binge drinking, having multiple sexual partners, and having suicidal thoughts increased the likelihood of both weapon carrying and physical fighting. These results were maintained after adjusting for socio-demographic confounders. Based on the Problem Behavior Theory, risky behaviors tend to cluster and contribute towards a trajectory of poor health outcomes as young adults transition to achieving independence and adulthood (Jessor, 1991).

Paper II has identified religiosity as a potential protective factor against physical fighting among Lebanese university students. A recent study showed that there was a meaningful negative correlation between religion and the tendency to engage in violence and other risky behaviors among Iranian university students (Ameri et al., 2017). This hints at the association between particular aspects of religiosity and violence that may be integrated within intervention efforts aimed at violence prevention (Salas-Wright et al., 2014).

Young adults in Lebanon might be affected by a culture that seems to condone violent acts such as weapon carrying. It has been a common practice in Lebanon to discharge rounds in the air on several occasions such as political speeches, celebrations, weddings, and funerals. The latter has often resulted in deaths or injuries among innocent bystanders. It is therefore warranted to discuss possible prevention measures. From a primary prevention standpoint, homeland security officials should strictly regulate the proliferation of weapons in the Lebanese community. This might entail freezing the issuance of gun carrying permits, targeting known arms dealers, and organizing mass awareness campaigns to encourage people to turn in their weapons (although the Lebanese civil war ended over 27 years ago, people still possess unlicensed weapons at home). At the secondary prevention level, interventions that aim to increase the amount of time youth spend with adults may be beneficial for the prevention of weapon carrying behaviors (Peskin et al., 2009). Since weapon carrying is a relatively frequent behavior among young adults in Lebanon, health professionals dealing with victims and perpetrator of violence could contribute towards tertiary violence prevention by including weapon carrying in their clinical assessment and preventive counseling (Thurnherr et al., 2009).

10.3 Polyvictimization and suicidal ideation among adolescents

There is a lack of evidence about the impact of polyvictimization on suicidal ideation among adolescents in the EMR. The extant evidence has either focused on the association between individual victimization such as bullying victimization and suicidal ideation (Mahfoud et al.,

2011) and has yet to examine the association between polyvictimization and suicidal ideation. Paper III bridged the gap in the literature by exploring the latter association in the UAE. The results from that study indicated that victims of co-occurring violent exposures reported higher rates of suicidal ideation than those with a single or no violent exposure. A recent study conducted among Vietnamese adolescents indicated that polyvictims were more likely to report suicidal ideation than both non-victims and victims of fewer forms of victimization (Le et al., 2016). A study using longitudinal data reported that polyvictimization was the most powerful predictor of suicidal ideation among adolescents. This reflects significant adversity within the lives of those affected by different forms of victimization (Turner et al., 2012)

Furthermore, this study highlighted the moderating role of gender on the association between polyvictimization and suicidal ideation. When compared to male adolescents, females who were exposed to two forms of victimization exhibited more pronounced suicidal behavior. These are concordant with a previous Finnish cohort study that reported a significant association between bullying victimization and suicidal behavior only among young females (Klomek et al., 2009). Conversely, male adolescents who were seeking outpatient psychiatric assessment after being exposed to bullying were found to be at greater risk for suicidal ideation than females (Laukkanen et al., 2005). Hence there is a need for more methodologically robust studies to replicate and further explore the moderating role of gender on the effects of victimization on suicidal ideation.

Paper III highlights that 1 in 3 students in the UAE will experience some type of victimization by the age of 16. This widespread victimization is key culprit in a variety of physical and mental health-related consequences affecting adolescents well into their adult years (Finkelhor et al., 2005). Prevention strategies aimed at curbing polyvictimization and alleviating its detrimental effects on the youth's mental health are needed. Primary violence prevention could be achieved through steering prevention services towards an incorporated and integrated, holistic approach to adolescent victimization. For instance, educational programs in schools could benefit from including a violence prevention module within health courses. From a secondary prevention perspective, home visits from social workers for students at risk of violence could be organized. At the tertiary level, school officials could provide mental health counseling for both victims and perpetrators of violence.

10.4 Suicidal ideation in conflict settings

Several countries in EMR have been subjected to recent (Lebanon) and ongoing (Syria, OPT) conflicts. Although it is now well established that armed conflict has a detrimental effect on

the mental health of those living in conflict zones (de Jong et al., 2003; Murthy and Lakshminarayana, 2006), very few studies have specifically examined suicidal ideation within conflict settings in EMR. Paper IV provides a baseline evidence about suicidal ideation among adolescents living in OPT and in UNRWA camps. The findings of this study point out that Palestinian adolescents living in this conflict setting reported a higher rate of suicidal ideation as compared to the global average across 49 low- and middle-income countries that participated in the GSHS (Page et al., 2013). The study also identified several risk factors of suicidal thinking (ideation and planning) such as substance use, victimization, and a lack of parental understanding. However, not all adolescents with risk factors develop suicidal ideation as protective factors can buffer the effects of risk factors on suicidal behaviors (Benard, 2002). Key protective factors against adolescent suicidal ideation that have been documented in the literature include self-esteem (Kidd and Shahar, 2008; Wilburn and Smith, 2005), emotional adaptation (Cha and Nock, 2009), and positive parenting (Davalos et al., 2005; Garcia et al., 2008).

Limited access to diagnosis and treatment of mental health disorders may contribute to the alarming rate of suicidal ideation among Palestinian adolescents (Saymah et al., 2015). Furthermore, individuals with mental illness have the dual burden of coping with the symptoms and societal stigmatization of their illness (Rusch et al., 2005). Hence, stigma may also be a barrier to care seeking (Narrow et al., 2000).

In light of the alarming rates of suicidal ideation among Palestinian adolescents coupled with the limited availability and accessibility to mental health services, strategies aimed at improving their mental health are essential. Primary prevention measures aimed at changing the political sphere where Palestinian adolescents are living to improve their mental health are difficult to implement. Nevertheless, the dialogue between the involved parties under the patronage of international organizations could be a good avenue to seek. At the secondary prevention level, health officials in collaboration with schools could offer awareness campaigns targeted at parents to highlight the importance to communication with their children. Regarding tertiary prevention, schools could offer to counsel to students who are suffering from extreme mental health issues such as suicidal tendencies.

10.5 Strengths and limitations

The major strengths of this synthesis paper include sourcing and analyzing data about youth violence from various countries in EMR that have different demographic, social, and economic profiles. This would potentially increase the generalizability of the results.

Additionally, Paper I and Paper II were among the first studies in Lebanon and the EMR to tackle the issue of youth violence among young adults. Moreover, two of the studies (Paper III and Paper IV) were based on nationally representative samples of school adolescents. Finally, the major types of violent exposures that have been reported in the literature were in fact addressed in this synthesis paper (such as bullying, physical fighting, and weapon carrying).

The arguments that were presented in the Discussion should be interpreted in light of the limitations of the four papers that were the basis of the synthesis paper. First, the results reported in Papers I and II were based on data that were collected in 2013, a period of relative political stability in Lebanon, which might not capture the prevalence of youth violence in light of current events (Syrian civil war). Second, the results presented here were based on cross-sectional studies which preclude establishing casual relations between exposure to youth violence and mental health outcomes. Third, self-reported data are prone to recall and social desirability biases which could under or over-estimate prevalence rates of youth violence. Fourth, although known confounders in the association between youth violence exposure and mental health outcomes were adjusted for in the analyses, unobserved confounders cannot be ruled out. Lastly, some scales that were used in Papers I and II were not specifically validated in the Lebanese youth population.

11. Conclusion

While violence in EMR has been generating a lot of interest especially in the media, this has not been met by a surge in evidence-based research. This cumulative dissertation provides a distinctive contribution to the literature concerning the relationship between youth violence and mental health in EMR. Nonetheless, this research effort should be complemented by further evidence to confirm its findings and improve its generalizability.

National governments in EMR are encouraged to use the information highlighted in this synthesis paper to combat youth violence and alleviate the suffering of those afflicted by its burden. Resources to prevent youth violence are scarce, so it is imperative that interventions are driven by evidence and target individuals, families and communities most at risk of becoming involved in youth violence. For instance, the risk factors identified in this cumulative paper could be taken into account to tailor prevention programs to the needs of high-risk subgroups. Moreover, strategic planning is needed while scheming prevention programs and this could be achieved through systematically creating primary, secondary, and tertiary prevention efforts that work synergistically towards youth violence prevention.

One avenue of evidence that is presented in this synthesis paper has focused on identifying the risk and protective factors of youth violence exposure. Future research could better investigate the dynamics that impact the likelihood of youth violence exposure by applying an ecological model within a mesosystemic framework. In other words, youth violence exposure could be examined through the multifaceted lens of key concepts like target suitability and guardianship within the neighborhood, family, peers, and individual levels of the mesosystem (Figure 5).

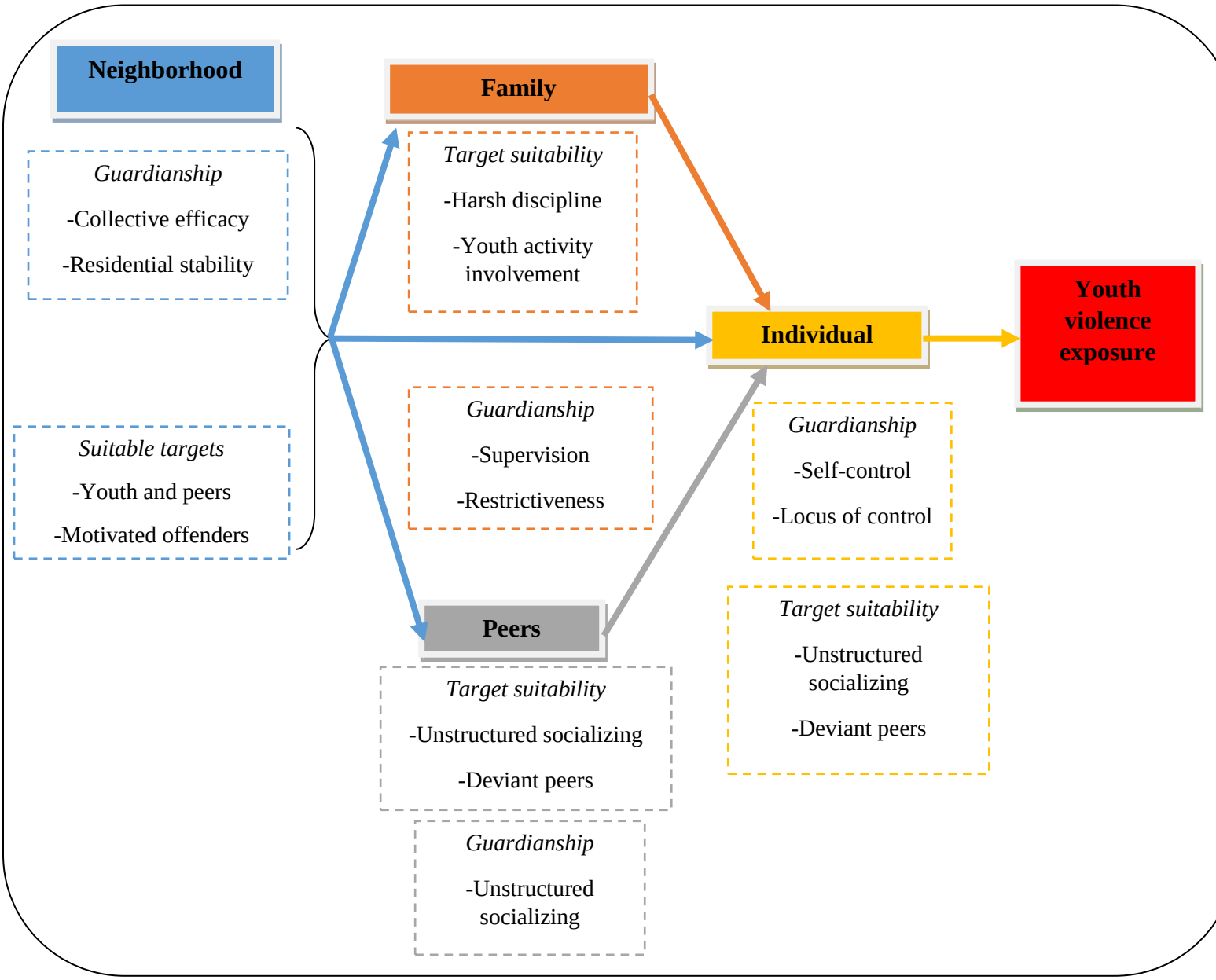

Figure 5: An ecological model within a mesosystemic framework to explain youth violence exposure (Antunes and Ahlin, 2017)

Target suitability is evaluated using peer relationships and risky activities and guardianship is assessed via social control, supervision, and monitoring (Averdijk and Bernasco, 2015). Neighbourhood context, family relations, peers, and individual characteristics have been demonstrated to significantly predict youth violence exposure (Ahlin and Antunes, 2017). Such a model could potentially explain why individuals are at a differential risk to experience victimization and/or witness violence in their community. Building on the latter, a cross-cultural comparative study that examines the mechanisms of youth violence exposure while considering the multidimensional relationship that exists within levels of the mesosystem is warranted. International comparisons could potentially confirm the underlying dynamics of the model and thus proof its validity, suitability and robustness. On the other hand, it is possible that in spite of the model's consistency, its elements (suitability, guardianship) quantitatively differ in different political, socioeconomic and cultural settings.

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Authors' contributions

All four papers were conceptualized and developed by the first supervisor and myself. I conducted all the analyses, drafted the manuscripts, and made the submissions as the corresponding author. Other co-authors contributed mainly to the write up of the manuscripts and made suggestions about the tables. I take full responsibility about the integrity of the data.

Declaration of originality

I hereby certify that this thesis is based on own original work and has been solely written by me. I have correctly acknowledged and cited the work of others. This thesis has neither been accepted nor submitted for any other degree at any other university. I further declare that I have not previously made attempts to do a doctorate at any national or international university.

Bielefeld, February 19th, 2018

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