

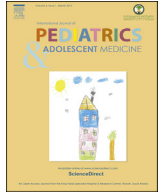
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## International Journal of Pediatrics and Adolescent Medicine

journal homepage: <http://www.elsevier.com/locate/ijpam>

## Review article

## Adolescent health and health care in the Arab Gulf countries: Today's needs and tomorrow's challenges



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## ARTICLE INFO

## Article history:

Received 10 June 2016

Received in revised form

29 November 2016

Accepted 4 December 2016

Available online 9 February 2017

## Keywords:

Adolescents

Arabs

Gulf countries

Health system

Adolescent health center

Health status

Non-communicable disease

Risk behaviors

Hospitalization

Health care transition

## ABSTRACT

This review article documents the evidence regarding the health status of adolescents aged between 10 and 19 years in the Arab region and the Gulf Cooperation Council countries (GCC) and also considers the state of adolescent health care in the region compared to the recommended guidelines for such services. Adolescents make up more than 25% of the population of the GCC countries, a percentage that is far higher than that in other high-income countries, yet their health status and health care needs are not given proportional attention in the region. Thus, the burden of mortality and morbidity for adolescents in the region has shifted from communicable diseases to road traffic injuries, mental health issues, non-communicable diseases, and health-compromising behaviors and conditions that contribute to those issues. Whereas the sources of evidence are limited with respect to some issues, such as mental health issues, sexual and reproductive health, and alcohol use, other health issues, such as rising rates of tobacco use, low levels of physical activity, minimal consumption of fruit and vegetables, and high levels of obesity, are better-documented. Many health care providers see adolescents who have limited or no training in adolescent health care and adolescents who are transitioned to the adult care system at young ages without the necessary health care transition services, thus creating challenges for these individuals to access developmentally appropriate health care. Recommendations include prioritizing health care practice, health care facilities, clinical education, and adolescent health research to address key aspects of adolescent health and adolescent medical care in the GCC countries. This could be accomplished through the development of adolescent health care centers that bring together expert interdisciplinary care, excellent health provider training, and cutting-edge adolescent health research to provide leadership throughout the region and further both the health of adolescents and their access to high-quality, holistic health services.

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## 1. Introduction

Adolescence, which represents a critical period in each individual's life, is characterized by significant biological, physical, psychological, and emotional changes, and hence, it is important for the future of both individuals and nations. Social roles, social relationships and social expectations for the developing individual provide the foundation for adult functioning, though these, too, are subject to significant changes during adolescence [1,2]. Many of the behaviors and health conditions that influence one's life-long

health begin during adolescence.

The current 1.2 billion adolescents aged between 10 and 19 years comprise just under one-fifth of the world's population [1]. As such, this population influences social and economic developments in many countries and will continue to do so as they transition into adulthood. Accordingly, the healthy development of adolescents is one of the foundations of the world's future, and as such, it is influenced by their environment, education, supportive relationships, and access to high quality health services. Therefore, fostering the conditions for the healthy development of adolescents and supporting their health should be a global priority [1].

Adolescent populations vary widely throughout the world, and similarly, their health issues also vary. The Arab region in general, and the countries in the Gulf Cooperation Council (GCC) specifically, are rapidly growing both economically and demographically.

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Peer review under responsibility of King Faisal Specialist Hospital & Research Centre (General Organization), Saudi Arabia.

Over the last four decades, the Arab region's population has increased to an estimated 359 million in 2010 [3], and more than half of that population is comprised of children and young people age 24 and younger. This rapid population increase peaked around 2005, but it is expected to continue until 2050, when the number of children and young people in the region may reach 217 million [3,4].

In the GCC region, the proportion of youth is lower than it is in other Arab countries in the region, but still higher than it is in other high income countries. It is estimated that more than one-third of the current population is under the age of 24 years [5]. However, the health services dedicated to this population are not proportional to their population size, and thus, adolescents and their families often do not know where to obtain medical help should they need it [6]. Adolescents have specific health care needs based on their developmental stage and individual life circumstances. While there is some progress in the health systems of the GCC, as in many countries, a gap exists between the training, knowledge and skill-set of existing health-care providers and the needs of the adolescents for whom they provide care [7].

This review focuses on the health status of adolescents in the countries that make up the GCC, namely, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). We examine the changing causes of morbidity and mortality among this age group. We also identify the state of evidence in these countries for key adolescent health issues, including health-compromising behaviors that are global targets for prevention and intervention. As a case example, we focus on the country of Qatar. We identify the call for specific health care services for adolescents in the GCC, including the specific needs for adolescent-responsive hospital care and support during the transition to adult health care settings for youth with special health care needs. Finally, we present a set of recommendations for addressing the health of adolescents in the GCC, and as supplementary material, we offer a brief proposal for improving the health system for adolescents through a national adolescent health center for clinical care, training, and research.

## 2. Review

### 2.1. The state of adolescent health in Arab Gulf countries

Throughout the world, the leading causes of death and the burden of diseases for health systems have shifted from communicable diseases, which were the primary causes in the 1990s, to non-communicable diseases (NCD), such as ischemic heart disease, stroke, diabetes, and cancers, as well as mental health problems [8,9]. Non-communicable diseases kill more people each year than all other causes combined [10], and four of the key modifiable risk behaviors—tobacco use, excessive use of alcohol, unhealthy diet, and insufficient physical activity—begin or become entrenched during the adolescent years. These behaviors can lead to weight issues including and obesity, high blood pressure, and high cholesterol—all directly related to NCDs.

Although most adolescents are healthy most of the time, the assumption that adolescence is a healthy stage that needs little attention is inaccurate, as evidenced by the recently released 2012 estimates of mortality and morbidity for adolescents [9]. While there has been a notable decline in many causes of death and disability among infants, children and adults, mortality has declined more modestly among adolescents [9], even though most causes of adolescent death are preventable. The leading causes of mortality and of disability-adjusted life years (DALYs), an estimate of years of healthy life lost prematurely due to death, disease, or living with a disability, also reveal issues in adolescent health that have

received less attention, especially within the Arab region, such as road injuries and other unintentional injuries, depression, suicide, alcohol abuse, interpersonal violence, and war [9].

### 2.2. Leading causes of mortality

According to the World Health Organization (WHO), there are challenges to accurately estimating country-specific leading causes of adolescent mortality in many regions of the world, thus estimates are grouped within WHO regions to improve accuracy. An exception is high income countries, which are grouped together throughout the world, because of their similarities in patterns of mortality [9]. Although the WHO Eastern Mediterranean Region includes the GCC countries, they are primarily high income countries, and therefore, their mortality patterns likely differ from the low and middle income countries in their region. When leading causes differ for high income countries and the Eastern Mediterranean Region, both are reported.

Road traffic injuries are among the top five leading causes of death among adolescents worldwide, in all regions, among both male and female adolescents, and for both younger (10–14) and older (15–19) age groups [9]. For high income countries such as the GCC, road traffic injuries are the number one cause of death, at 3.74 deaths per 100,000 for girls and 9.10 deaths per 100,000 for boys. The other four top causes of death among younger adolescents include self-harm (suicide), leukemia, and congenital anomalies for both boys and girls, plus drowning for boys and lower respiratory infections for girls. Among older adolescents in high income countries, four of the top five causes of death are the same for boys and girls, namely, road traffic injuries, self-harm, interpersonal violence, and drug use disorders, while the fifth is drowning for boys and congenital anomalies for girls. Among the low and middle income countries in the WHO Eastern Mediterranean Region, another leading cause of death for both 10- to 14-year-olds and 15- to 19-year-olds is war, which accounts for the highest rate of death for both older and younger boys, the second highest rate for younger girls, and the fourth highest rate for older girls [9]. Maternal mortality is the leading cause of death among older girls in the Eastern Mediterranean Region, although it is not in the top five causes among girls in high income countries.

### 2.3. Leading contributors to disability-adjusted life years (DALYs)

Not only are accidents, mental health issues, violence and substance use disorders among the leading causes of death, but they also contribute to premature loss of healthy life for adolescents in high income countries of the GCC [9]. The leading contributors to DALYs among adolescents in 2012 have not changed much since 2000 and are quite similar for boys and girls, as well as older and younger adolescents. Among adolescents overall, the leading contributors are unipolar depressive disorder, anxiety disorders, alcohol use disorders, road traffic injuries, back and neck pain, and asthma. Among younger adolescent girls (10–14 years), migraine is also a leading contributor to DALYs, whereas childhood behavioral disorders are among the top five contributors for younger boys. Among older male and female adolescents, alcohol use disorders outrank asthma, whereas for boys, self-harm contributes more to DALYs than anxiety. Together, mental health and substance use issues account for more than one-half of the top-ranked DALYs among adolescents in high income countries such as those in the GCC [9]. Though these DALYs capture the current burden of disease among adolescents, they may not best document the role that health-compromising behaviors that begin during adolescence play in contributing to DALYs in later years. Other analyses have estimated the impact of long-term contributors and have identified

several health-compromising behaviors in adolescence that influence the top 20 DALYs in older age groups. Among these behaviors are tobacco use, alcohol use, physical inactivity, and a diet low in fruits [11]. Furthermore, health condition, high body mass index and obesity were also significantly linked to DALYs for adults.

#### 2.4. Non-communicable diseases: a growing priority for adolescence

As shown by the mortality and morbidity estimates, non-communicable diseases (NCDs) are a worldwide problem, and thus, the burden on individuals and health systems is high and it is increasing [12]. As an example, in Oman, a country in the GCC, the treatment of cardiovascular disease alone will account for 21% of the total health-care expenditures by 2025 [13]. However, health researchers agree that a comprehensive package of primary prevention, health-care interventions and improved surveillance can substantially reduce the burden of NCDs [14]. Similarly, the World Health Organization has focused significant planning and investment on developing a set of global strategies to reduce NCDs [10,15]. The adolescent years offer opportunities for prevention and early clinical intervention [16], which can reduce the damage caused by NCD risk factors because, when addressed early in, the habits are not yet well-established. There are four main behavioral factors that contribute to increased risk for and greater prevalence of for NCDs, namely, physical activity, nutrition, tobacco and alcohol use, and adolescent sexual and reproductive health.

#### 2.5. Physical activity and nutrition

Although the importance of physical activity is a focus of many health authorities globally, it should also receive greater attention from the policy makers in the Arab countries, in general, and the GCC countries in particular given that insufficient physical activity is among the top four mortality risk factors [17]. Together with an unhealthy diet, lack of physical activity can lead to health conditions in young people, such as excess weight, obesity, metabolic syndrome and hypertension, all factors that contribute to the pathogenesis of cardiovascular diseases, diabetes, and cancers in adulthood. Obesity has become a significant issue in high income countries such as the Arab Gulf area due to rapid urbanization, the increase in access to fast food, and the increase in living more sedentary lives [18]. Among adolescents aged between 13 and 15 years in the Arab countries who participated in the Global School Health Survey, Kuwait and the UAE exhibited have the highest percent of obese adolescents, with 26% of boys and 19% of girls in Kuwait and 18% of boys and 12% of girls in the UAE rated as obese according to WHO standards [19].

The World Health Organization recommends adolescents under the age of 18 years participate in at least 1 h of moderate to vigorous physical activity every day, and for 18- and 19-year-olds, they should engage in at least 150 min of moderate to vigorous activity per week [20]. However, in GCC countries, as elsewhere in the world, most adolescents do not meet these recommended guidelines. In the Arab Teens Lifestyle Study, approximately 50% of boys aged 14 to 19 and approximately 70% of girls in the same age bracket in Kuwait and Saudi Arabia were found to not meet the recommended daily minimum [21,22]. In another recent study, only 5% of girls in one city in Saudi Arabia reported adequate levels of physical activity [23], and data from the Global School-based Student Health surveys among adolescents aged 13 to 15 in Kuwait, Oman, Qatar and the United Arab Emirates found that 20 to 35% boys and 10 to 23% of girls met the recommended daily minimums [19]. The lower levels of physical activity among girls may be due to the lack of places to exercise, a reason they reported more

often than boys in a seven-country study conducted in the Arab region [24]. Among older adolescents monitored by the WHO STEPwise Approach to Surveillance studies, the majority, similar to younger adolescents, do not attain the recommended levels of physical activity [19].

The types of foods people eat are important factors in the prevention of non-communicable diseases, especially fruit and vegetable consumption [25]. It is well known that eating fruits and vegetables may reduce the risks for cardiovascular diseases, stomach cancer and colorectal cancer [26,27]. While other nutritional practices are also important, such as limiting the intake of salt, sugar-sweetened beverages, and high energy foods, there is limited monitoring data from GCC countries regarding nutrition practices other than fruit and vegetable consumption. In Kuwait, Qatar, and the UAE, fewer than one in four adolescents between the ages of 13 and 15 report eating the recommended five or more servings of fruits or vegetables daily [19]. Sugar-sweetened beverages, such as soft drinks, which can contribute to obesity, are also monitored. In Oman and the UAE, more than half of the adolescent boys and nearly half of the adolescent girls between the ages of 13 and 15 report drinking one or more soft drinks daily during the past 30 days [19], whereas in Qatar, 60% of the boys and 65% of the girls had consumed soft drinks on a daily basis.

#### 2.6. Tobacco and alcohol use

Tobacco use remains one of the leading contributors to the global burden of disease and mortality due to non-communicable diseases [19]. Because adolescents are vulnerable to peer pressure as well as other social and familial factors, tobacco and other substance use often begins during adolescence [28]. Youth aged 13 to 15 years from 17 Arab countries participated in the Global Youth Tobacco Survey, which assessed tobacco use and included both cigarettes and the water pipe known as shisha [29]. Rates of tobacco use varied widely across countries. Specifically, among the GCC countries, Oman reported the lowest rates of tobacco use, with 5% of boys and 2% of girls reported the current use of tobacco [19]; Bahrain, Kuwait, Qatar, and the UAE reported similarly high rates of tobacco use, with 25% of the boys and more than 10% of the girls reporting current tobacco use, whereas Saudi Arabia found that 21% of the boys and 9% of the girls reported current tobacco use [19]. A recent study of students in Riyadh, Saudi Arabia, revealed similar findings [30]. Studies suggest that tobacco use may be increasing among youth in GCC countries, a factor that will contribute significantly to adult health problems in the coming years [29,31].

Unlike tobacco use, relatively less is known about alcohol use among young people in Arab countries compared to other regions because the laws and religious norms in many Arab countries prohibit alcohol [32], and thus, none of the GCC countries who participated in the Global School Health Survey included direct questions about alcohol use [19]. However, a few studies have documented alcohol use among some young people in the region. One example is a national study of Omani secondary school students, which reported 4% of students had consumed alcohol [33], and a second paper documented that approximately 5% of the adolescents in Saudi Arabia reported alcohol use [34].

#### 2.7. Adolescent sexual and reproductive health

Given that maternal mortality remains a leading cause of death for adolescent girls between the ages of 15–19, one of the strategic pillars of the United Nations Family Planning Agency is to build capacity for sexual and reproductive health service delivery and to promote comprehensive sexuality education for adolescents [35]. As it has in other countries, globalization has had an impact on the

social lives of adolescents in Arab countries. Furthermore, despite the cultural and religious values that restrict sexual relations to those who are legally married, some adolescents in GCC countries report occasional premarital sex [36,37]. However, the school and household surveys that monitor adolescent health in most countries have not included questions about sexual behaviors in Arab Gulf countries, and therefore, it is difficult to monitor general sexual and reproductive health or identify trends. That said, there are some studies in limited areas. For example, in Jordan, one study found that 7% of college students and 4% of youth aged 15 to 24 from the general population engaged in sex outside of marriage [38], whereas in Saudi Arabia, 31% of the male college students in Riyadh have engaged in sexual activities [39].

In most GCC countries, there is also a lack of sexual education in schools, which suggests that young people who are sexually active outside of marriage may be at risk for sexually transmitted diseases and unintended pregnancies. There appears to be little communication about sexual and reproductive health between girls/young women and their parents [40] and limited sexual health knowledge among youth of both sexes [41]. For example, only 51% of male college students knew that condom use could prevent sexually transmitted infections and diseases [39].

## 2.8. A focus on Qatar

Qatar, despite being one of the smallest countries in the Arab world as well as one of the smallest GCC countries, both in area and population, has noticeable regional influence through its wealth, media, and politics. Accordingly, there has been a rapid transition in its socioeconomic status, life style and modernization. Though people in Qatar enjoy a high standard of living, which has resulted in significant improvement in their health system and in their life expectancy, this improvement has also resulted in negative health consequences for adolescents in Qatar, such as a more sedentary lifestyle, dangerous driving habits, less healthy diets, and tobacco use, all of which contribute to the same mortality and morbidity patterns found across high income countries [9,19]. The 2010 Global Burden of Disease Study's profile of health status in Qatar found that non-communicable diseases and road traffic accidents were a significant cause of health issues in Qatar [42] and that mental health problems and self-harm also posed significant threats to healthy lifestyles among adolescents in Qatar [42]. Although Qatar adolescents participated in the Global School Health Survey, they were not asked many of the questions about mental health, alcohol

use, or sexual health that were asked of adolescents in other countries, a situation that made it difficult to assess the status of some of the key health risks for adolescents. Among the health issues that were assessed, Qatar adolescents exhibited relatively high rates of tobacco use and sugar-sweetened beverages and low levels of physical activity and fruit and vegetable consumption [19] Fig. 1.

## 2.9. Promoting the health of adolescents in the Arab Gulf countries: the need for adolescent-focused health care

Given the high proportion of adolescents in the GCC countries and their health status, there is a clear case for increased priority on adolescent health care ranging from community- and school-based prevention and health promotion to high quality primary health care, multidisciplinary specialist treatment and adolescent-friendly hospital care for those with complex health needs [7]. In 2007, the King Fahad Medical City Children's Hospital in Riyadh, Saudi Arabia, convened an adolescent medical task force (Al-Makadma et al. [30]) that identified specific reasons for enhancing adolescent health care services for through the creation of adolescent health and medical centers.

Several of these reasons were based on the limited epidemiological evidence from existing sources. Chief among these were the recognition that many of the life-long patterns of behavior that influence the burden on the health system and affect adult health care seeking behaviors and other health-promoting activities are established during adolescent years, including health promotion/disease prevention behaviors and care-seeking patterns. They also noted the emergence of specific behavioral problems in adolescents, such as violence, mental health problems, tobacco use, drug abuse, etc., that contribute to the DALYs for adolescents, a factor that carries over into the adult years. The task force noted that despite the high percentage of adolescents in Arab communities and their development-specific health needs related to pubertal changes, self-esteem, sexuality, sexual identity, emotional development, changing sleep patterns, and social/peer pressures, as well as mental health problems that may emerge during adolescence, these needs are not addressed properly by the current health systems in the GCC region. In fact, the task force observed many areas where the health systems were lacking the capacity to address the needs of adolescents:

Adaptation from WHO: Qatar: Health Profile; Adult Risk Factors

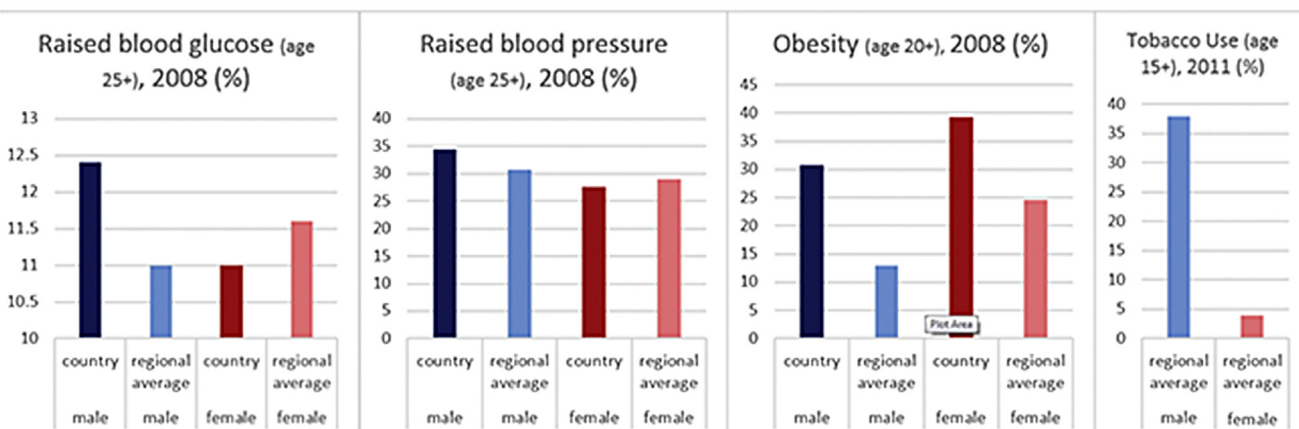


Figure 1. Qatar: Health profile; Adult Risk Factors.



- A lack of surveillance and research focused on adolescent health issues;
- A lack of widespread health promotion programs and preventative adolescent health services;
- A need for suitable youth-activity campaigns that enable adolescents to utilize their free time to positively impact their health;
- A healthcare gap for adolescents with chronic medical conditions and disabilities as they transition from childhood to adulthood;
- A need for well-qualified, dedicated primary health care providers for this age-group;
- A lack of adolescent medical training services and multidisciplinary adolescent health programs that graduate well-trained primary health care and specialist professionals who are able to provide needed adolescent-focused services;
- A lack of adolescent-focused hospital wards.

The observations of the 2007 task force convened in Saudi Arabia were confirmed empirically two years later by a study of 232 physicians and nurses in Saudi hospitals in four cities [43]. The study found that fewer than half of the clinicians had adolescent-specific training, yet nearly all had contact with adolescents in the clinical setting. Most respondents agreed that adolescents had different needs from those of both children and adults, and an overwhelming majority (85.8%) felt that young people should have adolescent-specific hospital wards. Moreover, most disagreed with the current practice in Saudi Arabia of transferring adolescents from pediatric to adult care systems at the age of 12 or 13.

The challenges identified for adolescents in the health care system of Saudi Arabia are not uncommon. Similar limitations with respect to establishing effective health services for adolescents have been noted in a number of countries, both globally and in the Arab Gulf region [7]. While the WHO has identified a number of areas throughout the health care system that could be the focus for enhancing health care for adolescents on a global scale [1,7], based on the way care is currently structured in many of the GCC countries, we focus on two issues that have been identified as important areas for change, namely, hospital services, which include health care transition from pediatric to adult care for adolescents with special health needs, school health and school health services, and the improvement of the primary health care system to enable it to deal with adolescents and the issues specific to this age group.

#### 2.10. Hospital services for adolescents

Adolescents are neither children nor adults. That is, their maturing brain, evolving capacities, and specific health issues and needs make it important to provide adolescent-focused hospital units or wards, a contention supported by position statements of pediatric and adolescent health professional societies as well as by research evidence from national hospital surveys [44–47]. Admitting young people to an adolescent ward can facilitate both peer support and improved therapeutic environments where different modalities, such as group therapy, can be implemented among same-aged peers. Grouping adolescents into dedicated units will also facilitate both clinical training and research in adolescent health.

Key issues related to the development of adolescent-specific hospital wards in GCC countries include issues suggested by the Canadian Pediatric Society's position statements [45,48]. These include ensuring that adolescents share rooms with other adolescents whenever possible and that, in GCC countries, they are placed in gender-segregated wards. The facilities should allow for privacy, including privacy curtains in rooms and private areas for

confidential interviewing and physical examinations. Facilities should also offer opportunities for group recreational activities and accommodate peer visitors as well as family members. Because education is a key factor in the lives of adolescents, hospital wards should, ideally, create an integrated system that allows direct communication between schools and health care providers to support the ongoing continuation of education during hospitalization when appropriate. Cultural and spiritual aspects of life are also important for hospitalized adolescents. Due to the varied origins and diverse backgrounds of health care providers in GCC countries, it is important to provide training regarding the diverse cultural and spiritual needs of hospitalized adolescents. Interpreters should be available to assist teens and their families who do not speak the same language as their clinicians, so the adolescents are not put in the position of translating for their families. Finally, confidentiality is a right for all adolescents capable of consenting for treatment. Adolescents should be given the opportunity to meet alone with their care providers to ask questions without their parents being present. At the same time, clinicians should encourage open collaboration with parents and other caregivers regarding the decisions that related to the health of the adolescent child.

#### 2.11. Health care transition for adolescents in the Arab Gulf region

Adolescence is a time of transition with respect to many aspects of life. For example, adolescents experience the biological transition of puberty, psychological transitions in their cognitive development, social and educational transitions, as well as transitions in relationships with parents. Adolescents who have specific needs that require regular health care due to chronic conditions also face health care transition, which is defined as the "process of a purposeful, planned movement of adolescents with chronic physical and/or medical conditions from a child-centered to an adult-oriented health care system." [49] As a result, there are significant differences in expectations, style and culture of these services, while at the same time, new health care needs may be evolving [50]. A number of international professional health care bodies have focused on the importance of health care transition for adolescents [49–52], and a number of transition models have been proposed [52–55], most of which identify key principles for health care transition. For example, services must be appropriate for both the chronological and developmental age of the individual; they should be prepared to address common concerns of young people including growth and development, sexuality, mental health, substance use, and other behaviors, as well as education and career planning; they should help adolescents develop autonomy and self-care knowledge and skills and foster a sense of personal responsibility; and they should be flexible and individualized. The issue of health care transition is becoming increasingly important in many countries because the life expectancy of adolescents with special health conditions is increasing. For instance, today, in high income countries, as many as 90% of youth with special health care needs survive into adulthood [49].

At the same time, the approaches of pediatric and adult health care systems can be quite different, and adapting to the adult system can present a challenge for adolescents [56]. Pediatric services tend to incorporate family-centered approaches to care, whereas adult services are focused on the individual. Similarly, pediatric care is developmentally focused and adapts to the growing capacity of children and adolescents, whereas adult care tends to be disease or condition focused and assumes equal levels of capacity among most adults. Moreover, pediatric clinical settings are often perceived as more nurturing, and they focus on psychosocial support for adolescents and their families, whereas adult services offer

a more cognitive and information-based approach to care. These differences in approaches to care require adjustment and skills in self-care and advocacy that adolescents must develop to transition successfully from the pediatric health care system to the adult health care system.

The process of health care transition frequently has barriers, including difficulty identifying adult health care providers, a lack of knowledge on the part of adult providers' about childhood chronic conditions, the adolescent and/or family's resistance to transition, and a lack of institutional support for transitional services, such as inadequate time, resources, and personnel for planning. Moreover, the transition to the adult healthcare system is often dictated by age or behavior rather than the readiness of the individual [55]. The situation in the Gulf countries appears to be even more challenging, because the age limit for admission to a pediatric ward is 12 years. Thus, beyond this age, an adolescent must be admitted to an adult hospital and treated by adult physicians. As well, in most of the Arab countries, only female caregivers can be admitted with the patient to pediatric wards, and girls older than 12 years with gynecological problems are admitted to adult gynecological facilities. Compared to western countries and other areas in the world, where pediatric services extend to at least 18 years of age, adolescents in the GCC countries between the ages of 12 and 18 years face increased stress and difficult accessing necessary medical care.

#### 2.12. School health/School health services

Schools are important and hold a unique position with respect to health care, as the personnel who promote positive healthy life choices can reach a large number of adolescents. Therefore, schools are a good place to promote health, apply preventive measures, and communicate values and information to the community-at-large, including families, friends and neighbors. Accordingly, it is necessary to adopt a comprehensive school program that includes a quality coordinated school health service program. Thus, school health services should include a set of planned, sequential strategies and activities aimed to promote the optimum social, emotional, physical, mental, nutritional and educational development of the students [60]. It is further concluded that a coordinated school health program should include eight components, namely, health education; physical education; health and medical services; nutrition, psychological and social services; positive, healthy school environment; health promotion; and family and community involvement [60].

#### 2.13. Improvement of the primary health care system

As per the recommendations of the WHO, the Arab countries in general and the GCC in particular must develop competency-based pre-service and in-service educational programs that address adolescent health care and medical issues. These countries and their programs must also extend support and guidance to the primary health care providers and develop policies and strategies that support the supervision and improvement of the performance of the health care providers. In addition, those countries must support, foster and implement the global standards for quality health care services for adolescents [61].

### 3. Conclusions

Adolescents represent a large sector of the population in the Arab world, including the Arab Gulf countries, but unfortunately, to date, their health status and health care needs have not been given proportional attention. There is limited monitoring of their health status and issues affecting their health in many of the countries,

thus leading to almost no evidence regarding the prevalence of mental health or reproductive health problems among Arab adolescents. The limited evidence from some of the Arab Gulf countries suggests that adolescents in the region demonstrate significant rates of health-compromising behaviors and conditions, such as tobacco use, lack of physical activity, poor nutrition, and obesity, that contribute to non-communicable diseases. They may also have significant untreated mental health issues and be at risk of dying due to traffic injuries.

This paper adds further evidence to support previous studies in the region that have called for strengthening the capacity of the health care system capacity, advancing tobacco control legislation, promoting healthy living campaigns, and developing policies that encourage young people to adopt healthier eating habits and engage in regular exercise [57,58]. The evidence also indicates a significant need to enhance health care practice, health care facilities, clinical education, and adolescent health research to address key aspects of adolescent health and adolescent medical care in the GCC countries. To guide such enhancements, countries must increase the visibility of and knowledge about adolescent health issues through better data collection and information systems at the national, regional, and local levels. We suggest countries make youth a policy priority and enable evidence-based advocacy for comprehensive adolescent policies and program development, investment and implementation [59].

Adolescents in the Arab Gulf countries also need countries to initiate or improve adolescent-responsive clinical care, such as adolescent-specific hospital wards, improve the primary health care system by making it responsive to the needs of adolescents, enhance schools' health services by adopting a comprehensive and/or coordinated school health services program, as well as an effective model to facilitate the transition to adult health care services at a more developmentally appropriate age. In our opinion, adolescent health care centers that bring together expert interdisciplinary care, excellent health provider training, and cutting edge adolescent health research may provide the leadership throughout the region that can further both the health of the adolescent population and their access to high quality, holistic health services. We proposal adolescent health care centers be developed in the region.

As adolescents are a valuable segment of the population in the GCC countries, supporting their health and well-being supports our future.

#### Competing interests

The authors have no conflict of interest to report.

#### Ethical clearance

This is Review article that does not need an ethical clearance.

#### Acknowledgments

We thank Melissa Moynihan, doctoral student at the University of British Columbia School of Nursing, for her assistance with reference checks and manuscript formatting.

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