Adolescent use of outpatient health services in Mexico: their health needs and associated factors

Leticia Ávila-Burgos, DSc,[1] Julio César Montañez-Hernández, MSc,[1] Nadia Cerecer-Ortiz, MSc,[1]
Celia Hubert, PhD,[2] Ileana Heredia-Pi, DSc,[1] Leticia Suárez-López, DSc,[2] Aremis Villalobos, DSc.[2]

Abstract

Objective. To estimate adolescent use of outpatient services, identifying their health needs and associated socioeconomic factors. **Materials and methods.** Using data from Ensanut 2018-2019, adolescents (ages 10-19) with health needs and those receiving care from health personnel (users) were identified. Needs were analyzed by sex and socioeconomic status (SES). Logistics models were used to assess the factors associated with the use of health care and choice of provider. **Results.** 6% of adolescents reported health needs, of whom 64% used outpatient services. Respiratory and gastrointestinal infections were the principal health needs prompting use of services overall. However, by SES, motivations centered on pregnancy for the poor and accidental injuries for the wealthy. One in three adolescents with health needs, particularly the poorest, received no care. Living with a partner and having health insurance were the main predictors of use. Greater schooling among household heads and higher SES correlated with the use of private services. **Conclusions.** Despite being aware of their health needs, adolescents are the group that uses health services the least in Mexico. Promoting preventative and timely treatment for this population would encourage youths to seek care more often.

Keywords: health services; outpatient care; adolescents

Resumen

Objetivo. Estimar la prevalencia del uso de servicios ambulatorios en adolescentes, identificando los factores socioeconómicos asociados con la utilización y sus necesidades de salud. **Material y métodos.** Se utilizó la Ensanut 2018-2019. Se identificaron adolescentes (10-19 años) con necesidades de salud y, posteriormente, a quienes recibieron atención por personal de salud (utilizadores). Se analizan las necesidades por sexo y nivel socioeconómico (NS); modelos logísticos evaluaron los factores asociados con el uso y elección del proveedor. **Resultados.** 6% de adolescentes reportó necesidades de salud; de éstos 64% utilizaron servicios. Las infecciones respiratorias y gastrointestinales fueron las principales necesidades para la utilización. El embarazo fue motivo de consulta frecuente en hogares pobres y las lesiones accidentales en los ricos. Uno de cada tres adolescentes con necesidades no recibió atención, particularmente los más pobres. Vivir en pareja y tener afiliación médica fueron los principales predictores del uso. La mayor escolaridad del jefe del hogar y mayor NS se asociaron con el uso de servicios privados. **Conclusiones.** A pesar de percibir necesidades de salud, los adolescentes son el grupo con menor uso de servicios de salud en México. Promover el cuidado preventivo y la atención oportuna en esta población, alentaría su mayor búsqueda de servicios de salud.

Palabras clave: servicios de salud; atención ambulatoria; adolescente

(1)   Centro de Investigación en Sistemas de Salud, Instituto Nacional de Salud Pública. Cuernavaca, Morelos, Mexico.
(2)   Centro de Investigación en Salud Poblacional, Instituto Nacional de Salud Pública. Cuernavaca, Morelos, Mexico.

Adolescents represent one-sixth of the world's population, totaling 1.2 billion individuals between the ages of 10 and 19 years, most residing in developing countries.[1] Although generally assumed to be healthy, adolescents contract infectious diseases and are prone to traffic injuries, interpersonal violence and mental-health disorders.[2]

The frequency and distribution of these conditions are heterogeneous among populations. It has been recognized that the social circumstances in which individuals are raised influence their health, with low socioeconomic status (SES) linked to diminished levels of well-being and increased barriers to healthy and fulfilling lives.[2-4] Several studies of children and adolescents[4] have documented that tuberculosis, growth retardation, obesity, mental disorders and teenage pregnancy occur most frequently among individuals of low SES.

Studies have also reported differences by sex: while respiratory allergies, asthma, dermatitis and overweight occur more frequently among female children and adolescents, males report a higher prevalence of injuries and mental disorders.[4] These differences may be linked to socialization processes that dictate differential gender norms between boys and girls, resulting in health outcomes based on sex.[5] Because adulthood is significantly influenced by behavior, habits and health conditions experienced during adolescence, this is considered a critical stage of life.[1,2] Accordingly, special importance has been accorded to providing adolescents with a fair opportunity to reach their full health potential, this requires ensuring that all their health needs are covered.[1,2]

For adolescents between the ages of 10 and 19 years, representing 17% of the Mexican population,[6] respiratory and gastrointestinal infections constitute the principal causes of morbidity.[7,8] Similar to what has been reported worldwide, health problems in Mexico differ by sex:[8] traffic injuries occur more frequently among male adolescents, while females suffer more often from urogenital tract infections and overweight. Studies have also addressed differences in health needs by SES; however, their analyses have been limited to specific conditions such as accidental injuries and sexual-and-reproductive-health problems. Findings indicate that low-SES adolescents[9] need care most frequently for pregnancy and those of medium and high SES for accidental injuries.[10]

Health policies implemented by the Mexican government in the early 2000s have strengthened the health-system response to adolescent needs. In 2000, Mexico launched adolescent-friendly services and subsequently institutionalized a Comprehensive Care Model for Adolescent Reproductive Health. Both initiatives were designed to ensure that youths receive personalized, nondiscriminatory and quality care.[11] In addition, the Social Protection System in Health created in 2003, now defunct, expanded access to health services for the population lacking social security (SS) coverage.[12] Finally, policies introduced to abate adolescent pregnancy improved access to contraceptive services.[13]

The present reforms of the health system promote primary health care, rendering it particularly relevant to identify the individual characteristics that favor the use of such services by the Mexican population. Studies analyzing the use of outpatient services have described the individual and household characteristics that differentially predispose people to use health services and influence the selection of providers.[14,15] However, these studies have included the entire population. Meanwhile studies on adolescent use of health services have centered on particular conditions or analyzed subgroups such as students.[2,9,16] Consequently, little is known about the health needs of the adolescent population nor the characteristics influencing their use of health services.

The way individuals perceive their health condition or health needs influences the way they pursue health.[17] "Need" has been defined as a feeling of lack linked to a desire of satisfaction. However, it is difficult to formulate a definition of "health need" because of its level of complexity. Studies have analyzed health needs from different conceptual viewpoints including sociological and economic perspectives, with social scientist Jonathan Bradshaw having advanced one of the most widely accepted definitions. According to this author,[18,19] there are four types of need: (1) normative (professionally standardized), (2) felt or perceived by individuals as a wish or desire that spurs them to seek care and ultimately make a demand for health services; (3) expressed, that is, vocalized or manifested as use of services; and (4) comparative, indicating that needs observed in one location may be similar for people with analogous sociodemographic characteristics in another location. Bradshaw affirms that not one, but rather a combination of all five definitions, is required to identify real needs.[19]

In addition, it has been demonstrated that access to and use of health services involve an interaction between individual and health-system characteristics.[14,17,20,21] That is, factors such as personal autonomy as well as cultural, economic and sociodemographic traits not only influence people's ability to perceive their need for care, but also influence their potential for seeking and obtaining the services they require. Meanwhile, the characteristics of health systems (the provider) impact on people's access to and use of services. These include the distribution, availability, quantity and quality of the resources required as well as their prices.

This study analyzes service use from the perspective of individuals. It was aimed at estimating the prevalence of use of outpatient health services by adolescents 10 to 19 years old, identifying the socioeconomic factors associated with their use as well as the principal self-reported health needs (felt and expressed) prompting their search for care.

Materials and methods

Data and population

We conducted a cross-sectional study with data from the 2018-2019 Health and Nutrition Survey (Ensanut), featuring a probabilistic, multistage design, representative nationally as well as by urban/rural strata. Its methodology has been described elsewhere.[22] We utilized household and outpatient-service-user questionnaires to obtain data on the socioeconomic characteristics, use of outpatient services and health needs motivating the quest for care. For this study, we selected adolescents from 10-19 years of age with complete socioeconomic and health-related information (n= 28 910).

Variables of interest

Health needs and use of health services

We began by identifying adolescents with health needs, and initially included those who responded affirmatively to either of the following questions: (1) "In the last two weeks, have you experienced a health problem due to an illness, a physical injury, an accident or an assault?" and (2) "In the last two weeks, have you requested a consultation, not requiring hospitalization, for an injury, an accident, an illness or controlling an illness?". At this point, we included n= 1 732 (N= 1 324 378) adolescents aged 10-19 years in the analysis. These were then classified into two groups: users, or adolescents who reported having requested and having received care from a health professional, and non-users, or those who reported having experienced a health need (felt and expressed) but not having received care including from a health professional. Figure 1 illustrates our sample-selection process.

Subsequently, we constructed a variable to classify the different types of outpatient-service providers: 1= public (SS and government institutions), and 2= private (private facilities and doctors' offices adjacent to private pharmacies [DAPPs]). The term "health professionals" included physicians, nurses, nutritionists, dentists and health assistants. Finally, based on the outpatient-

service-user questionnaire administered to a sample of respondents who had received such services within the two weeks prior to the survey, we obtained information for 768 (N= 607 598) adolescents. The answer options for the question concerning self-perceived health problems consisted of 51 diseases, which we grouped into 11 categories (supplementary table).[23]

Covariates

We selected those variables concerning use of health services[14,15,20,21,24] hat were also included in the household questionnaire; selection centered on analytical levels of individuals, households and place of residence.

Adolescent characteristics comprised age (10-19 years), sex (0= male, 1= female), marital status (0= not married/cohabiting, 1= married/cohabiting), being an indigenous-language speaker (0= yes, 1= no) and being affiliated with a health-insurance scheme (0=none, 1= SS, 2= a scheme for people without SS coverage, and 3= private insurance or other). Adolescents were classified as lagging behind in their studies based on the following criteria: 0= either they were over 15 years old and had less than nine years of schooling, or they were 10-15 years old, enrolled in school, and falling behind two or more years with respect to the grade appropriate for their age; and 1= otherwise.[25]

Household characteristics included traits of the head of household, receipt of cash or scholarships from a social program and SES. For the first, we explored years of schooling (0= 0 to 6, 1= 7 to 9, and 2= 10 or more) and identified whether the household head was the adolescent, his/her spouse or partner/daughter- or son-in-law (0), a parent (1), a grandparent (2), or other: another relative or someone to whom the adolescent had no family ties (3). Regarding the receipt of cash transfers and/or scholarships from the *Prospera* program, we provided two response options: 0= no and 1= yes. With respect to SES, we constructed tertiles (0= low, 1= medium and 2= high) using principal-component analysis based on housing conditions and household assets.

Finally, for area of residence, we examined the following characteristics: size (0= rural: <2 500 inhabitants and 1= urban: ≥2 500 inhabitants) and state-level marginalization (0= high or very high, 1= medium, and 2= low or very low).

Statistical analysis

We performed bivariate analyses of adolescents reporting health needs, comparing those who had vs. those who had not used outpatient services within the two weeks prior to the survey. Then, we disaggregated

health needs by sex and SES. We assessed differences using the chi-square test for categorical and Student's t test for continuous variables.

We used binary logistic regression to assess the associations between the selected covariates and the likelihood that adolescents would use health services, where use of services was the outcome variable: 1= Use of services, and 0= Non-use of services. Additionally, to understand which covariates were associated with their choice of service provider, we developed a multinomial logistic model based on an outcome variable with three categories: 0= Non-use of services, 1= Use of public services, and 2= Use of private services. We presented the estimates as odds ratios (ORs) with 95% confidence interval (95%CI). All estimates were adjusted for the survey design using Stata software version 14.0.

Results

Characteristics of adolescents with health needs, and their use of outpatient services

Table I presents the characteristics of the adolescents reporting at least one health need (n= 1 732). They were divided into those who had received outpatient care within the two weeks prior to the interview (n=1 098) and those who had not (n= 634). Among the 5.9% of adolescents reporting a health need, 64.2% had used outpatient services; 54.1% were female, aged 14.4 years on average, and 81.5% were attending school. Significant socioeconomic contrasts emerged between adolescent users and non-users of outpatient services. Compared to non-users, a higher percentage of users had a partner (4.2 vs. 7.9%), were affiliated with SS (35.5 vs. 43.9%), and lived in households within the highest SES tertile (29.4 vs. 39.2%) whose heads enjoyed more years of schooling (35.4 vs. 40.2%) and resided in states with very low/low levels of marginalization (37.3 vs. 46.2%).

Health needs prompting the use of primary-care outpatient services

The two principal health needs prompting the search for care were respiratory and gastrointestinal infections (46.7%) along with other noncommunicable diseases (15.8%), followed by accidental injuries (7.6%), noninfectious gastrointestinal diseases (7.1%) and, lastly, pregnancy and puerperium (5.3%) (supplementary table).[23]

Health needs were heterogeneously distributed between sexes (figure 2A), with mental and behavioral disorders, accidental injuries and respiratory and gastrointestinal infections observed more frequently in male adolescents (*p*<0.01). Meanwhile, other infec-

tious diseases as well as noninfectious gastrointestinal diseases and their symptoms predominated among female adolescents (*p*<0.01). Likewise, our study revealed a heterogeneous distribution by SES: as status improved, the percentage of adolescents treated for pregnancy, childbirth and puerperium decreased, falling from 51.3% in adolescents from poor households to 15.6% among those within the wealthiest tertile (*p*<0.01). Conversely, the percentage of adolescents treated for accidental injuries trended upward (figure 2B).

Factors associated with adolescent use of outpatient services

Table II shows that adolescents in cohabiting unions were more likely to use outpatient services (OR= 4.27; *p*<0.01), primarily public providers (OR= 4.18; *p*<0.01), than those who did not cohabit. Furthermore, adolescents affiliated with SS were more likely to use outpatient services (OR= 1.46; *p*<0.1) than those without health insurance. In particular, those affiliated with SS or a health-insurance scheme aimed at the population without SS were more likely to use public providers (OR= 5.67; *p*<0.01; and OR= 3.83; *p*<0.01, respectively) than those without health insurance.

Regarding household characteristics, adolescents from households where the head of household had ten or more years of schooling, as well as those in the highest SES tertile, were more likely to select private health-care providers (OR= 1.76; *p*<0.05; and OR= 1.94; *p*<0.05, respectively). By contrast, adolescents from households benefiting from *Prospera* transfers and/or scholarships were more likely to select public providers (OR= 1.59; *p*<0.05), compared to those from households without *Prospera* support. Finally, adolescents residing in states with low levels of marginalization were more likely to use the services of public health-care providers (OR= 1.69; *p*<0.05), compared to those in highly marginalized states.

Discussion

Based on data from a nationally representative survey, this study provides evidence on the use of outpatient services by Mexican adolescents, specifically as regards the health needs, prevalence of utilization, and socioeconomic factors associated with the use of these services.

Our findings show that only 6% (95%CI: 5.6,6.2) of adolescents reported health needs in the two weeks prior to the survey, significantly fewer than the 10% (95%CI: 9.4,10.4) obtained for adolescents during the same period in 2012 (supplementary table).[23] The needs that we found most frequently prompt adolescents to

Table I

SOCIOECONOMIC CHARACTERISTICS OF ADOLESCENTS REPORTING A HEALTH NEED AND USE OF OUTPATIENT SERVICES. MEXICO, ENSANUT 2018-19

Variables	Adolescent population		Adolescents who reported a health need	Adolescents who used health services		p-value
	n= 28 910 100%		n= 1 732 5.90%	No n= 634 35.80%	Yes n= 1 098 64.20%	
	Freq.	% (95%CI)	% (95%CI)	% (95%CI)	% (95%CI)	
Socioeconomic characteristics of adolescents						
Sex						
Male	14 567	50.4 (49.6,51.1)	45.9 (43.0,48.8)	45.4 (40.7,50.3)	46.1 (42.3,49.9)	0.8456
Female	14 343	49.6 (48.9,50.4)	54.1 (51.2,57.0)	54.6 (49.7,59.3)	53.9 (50.1,57.7)	
Age (mean)	28 910	14.5 (14.4,14.5)	14.4 (14.2,14.6)	14.5 (14.2,14.8)	14.4 (14.1,14.6)	0.5787
Educational lag						0.8832
Yes	1 820	6.2 (5.7,6.6)	5.3 (4.1,6.7)	5.4 (3.6,8.0)	5.2 (3.6,7.4)	
No	26 515	93.8 (93.4,94.3)	94.7 (93.3,95.9)	94.6 (92.0,96.4)	94.8 (92.6,96.4)	
Attending school						0.4237
No	5 967	20.5 (19.8,21.2)	18.5 (16.1,21.1)	19.8 (16.3,23.8)	17.7 (14.7,21.2)	
Yes	22 943	79.5 (78.8,80.2)	81.5 (78.9,83.9)	80.2 (76.2,83.7)	82.3 (78.8,85.3)	
Marital status						0.0432
Not married/cohabiting	22 096	94.4 (93.9,94.8)	93.4 (91.7,94.8)	95.8 (93.1,97.4)	92.1 (89.5,94.1)	
Married/cohabiting	1 360	5.6 (5.2,6.1)	6.6 (5.2,8.3)	4.2 (2.6,6.9)	7.9 (5.9,10.5)	
Health-insurance schemes						0.0394
None	4 626	18.2 (17.4,19.1)	14.6 (12.1,17.5)	16.9 (13.4,21.0)	13.3 (10.3,17.0)	
Social security*	10 093	35.2 (34.2,36.3)	40.9 (37.9,43.9)	35.5 (30.9,40.4)	43.9 (40.0,47.8)	
Schemes for those lacking social security coverage‡	13 685	45.0 (43.9,46.1)	42.4 (39.3,45.5)	45.8 (40.9,50.8)	40.5 (36.6,44.5)	
Other§	384	1.5 (1.3,1.8)	2.2 (1.5,3.2)	1.9 (1.0,3.4)	2.4 (1.5,3.7)	
Indigenous-language speaker						0.5222
Yes	1 439	4.8 (4.1,5.8)	2.0 (1.3,3.0)	2.3 (1.3,4.2)	1.8 (1.1,3.0)	
No	27 471	95.2 (94.2,95.9)	98.0 (97.0,98.7)	97.7 (95.8,98.7)	98.2 (97.0,98.9)	
Household characteristics						
Head of household						0.6769
Adolescent, his/her spouse or partner/daughter- or son-in-law	1 012	3.4 (3.2,3.7)	4.8 (3.7,6.2)	3.8 (2.3,6.4)	5.3 (3.8,7.3)	
Mother/father	22 659	78.8 (78.0,79.5)	76.5 (73.8,79.0)	76.3 (71.9,80.1)	76.6 (73.1,79.7)	
Grandparent	3 662	12.5 (11.9,13.2)	13.1 (11.1,15.5)	14.0 (10.9,17.7)	12.6 (10.1,15.7)	
Other#	1 574	5.3 (4.9,5.7)	5.7 (4.5,7.1)	5.9 (4.3,8.2)	5.5 (4.1,7.4)	
Head of household schooling (years)						0.0934
Elementary school or less (0-6)	10 733	36.9 (35.7,38.1)	30.9 (28.3,33.6)	35.0 (30.6,39.8)	28.6 (25.2,32.3)	
Middle school - complete/incomplete (7-9)	9 732	32.8 (31.8,33.9)	30.6 (27.8,33.6)	29.5 (25.4,34.0)	31.3 (27.7,35.0)	
High school or beyond (10 or more)	8 445	30.3 (29.2,31.4)	38.5 (35.8,41.2)	35.4 (30.7,40.4)	40.2 (36.6,43.9)	

(continues…)

(continuation)

SES-tertiles					0.0041
Low	9 971	33.5 (32.4,34.7)	26.5 (24.1,29.1)	31.4 (27.2,35.9)	23.8 (20.7,27.1)
Medium	9 991	33.8 (32.7,34.9)	37.8 (34.5,41.1)	39.1 (34.3,44.2)	37.0 (32.8,41.5)
High	8 948	32.7 (31.6,33.7)	35.7 (32.6,38.9)	29.4 (25.2,34.1)	39.2 (34.9,43.6)
Prospera social program: cash transfers and/or scholarships					0.5798
No	21 186	76.4 (75.4,77.2)	76.0 (73.6,78.3)	76.9 (72.9,80.5)	75.5 (72.3,78.4)
Yes	7 724	23.6 (22.8,24.6)	24.0 (21.7,26.4)	23.1 (19.5,27.1)	24.5 (21.6,27.7)
Area of residence characteristics					0.1541
Rural	8 707	25.1 (24.2,26.1)	23.2 (21.6,24.9)	25.8 (22.6,29.2)	21.8 (18.9,25.0)
Urban	20 203	74.9 (73.9,75.8)	76.8 (75.1,78.4)	74.2 (70.8,77.4)	78.2 (75,81.1)
Marginalization level					0.0093
High/very high	10 819	36.6 (35.6,37.5)	38.2 (36.7,39.8)	43.8 (39.6,48.1)	35.1 (32.4,37.9)
Medium	8 334	17.2 (16.6,17.8)	18.8 (17.8,19.8)	18.9 (16.4,21.7)	18.7 (16.9,20.5)
Very low/low	9 757	46.2 (45.2,47.2)	43.0 (41.4,44.7)	37.3 (32.8,41.9)	46.2 (43.1,49.4)

The total weighted sample of adolescents came to N= 22 885 463, of whom N= 1 324 378 reported health needs. Among these, N= 850 399 were users and 473 979 non-users of health services. Proportions with 95%CI were estimated taking into account the survey design.
* Social security included the *Instituto Mexicano del Seguro Social* (IMSS), the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE), and the institutes serving the members of the *Secretaría de la Defensa Nacional* (Sedena) as well as the workers of the national oil company *Petróleos Mexicanos* (Pemex).
‡ Schemes for the population without social security coverage included the *Sistema de Protección Social en Salud* (*Seguro Popular*) and the IMSS *Prospera* social program.
§ Private and other non-specified services.
# Another relative or someone to whom the adolescent had no family ties.

use health services are consistent with those reported by other authors,[2] namely, infectious diseases, accidental injuries, noncommunicable diseases and pregnancy.

Also in line with other studies, we found that adolescents from poor households experience pregnancy and puerperium more frequently than those from high-income households,[9] whereas accidental injuries occur more frequently among male adolescents from medium- and high-SES households.[10] This could derive from the large number of traffic injuries among high-income households, where families are in a better position to purchase vehicles, live in urbanized areas and use health services more often to treat their injuries. Mexico suffers from one of the highest rates of unintentional injuries in the world.[2] It is crucial to implement long-term intersectoral strategies that ensure sufficient resources to strengthen the prevention and control of such injuries.

Similar to what has been reported by other studies,[5] we found that allergies, skin diseases and asthma are the main causes of noncommunicable diseases in Mexico (supplementary table).[23] In addition, as has been observed globally,[26] overweight and obesity have escalated among Mexican adolescents, ranking us among the countries with the highest prevalence of these conditions (≥37.5%).[26] Because both represent a risk factor for chronic diseases such as diabetes and cardiovascular

disorders in later life, primary-care facilities must draw the attention of patients to the importance of healthy eating and physical activity for future health.

We also found that women report health needs more often than men. Several authors have stated that biological, sociobehavioral and psychological factors combined may be associated with gender differences in self-reported health.[5,27] Finally, our study highlights the urgent need to improve the provision of health care for mental and behavioral disorders, which begin in childhood or adolescence and often persist into adulthood. In Latin America, the average number of mental-health-service providers stands at 8.6 per 100 000 adolescents 10-19 years old vs. 12.5 in Europe.[28] This highlights the need not only to allocate additional resources to this area, but also to strengthen substance-abuse-prevention programs and intensify efforts towards a timely detection and treatment of these conditions.

Even when faced with the need for care, we found that only 64% of adolescents use outpatient services, less than that reported for the Mexican population overall, whose use ranges from 71 to 76%.[14,15] These results are in line with other studies indicating that adolescents use health services less frequently than any other age group.[2,21] Accordingly, their utilization rate for outpatient services is also the lowest.[29]
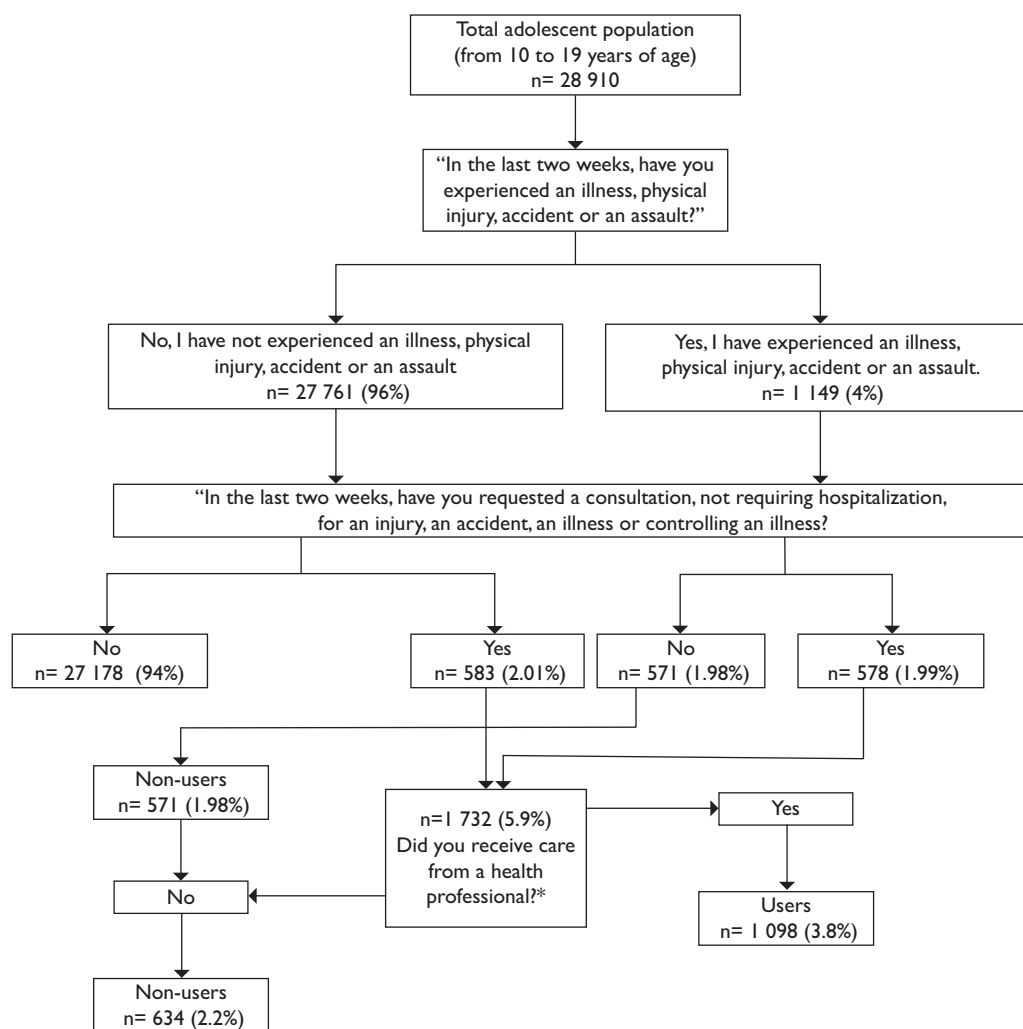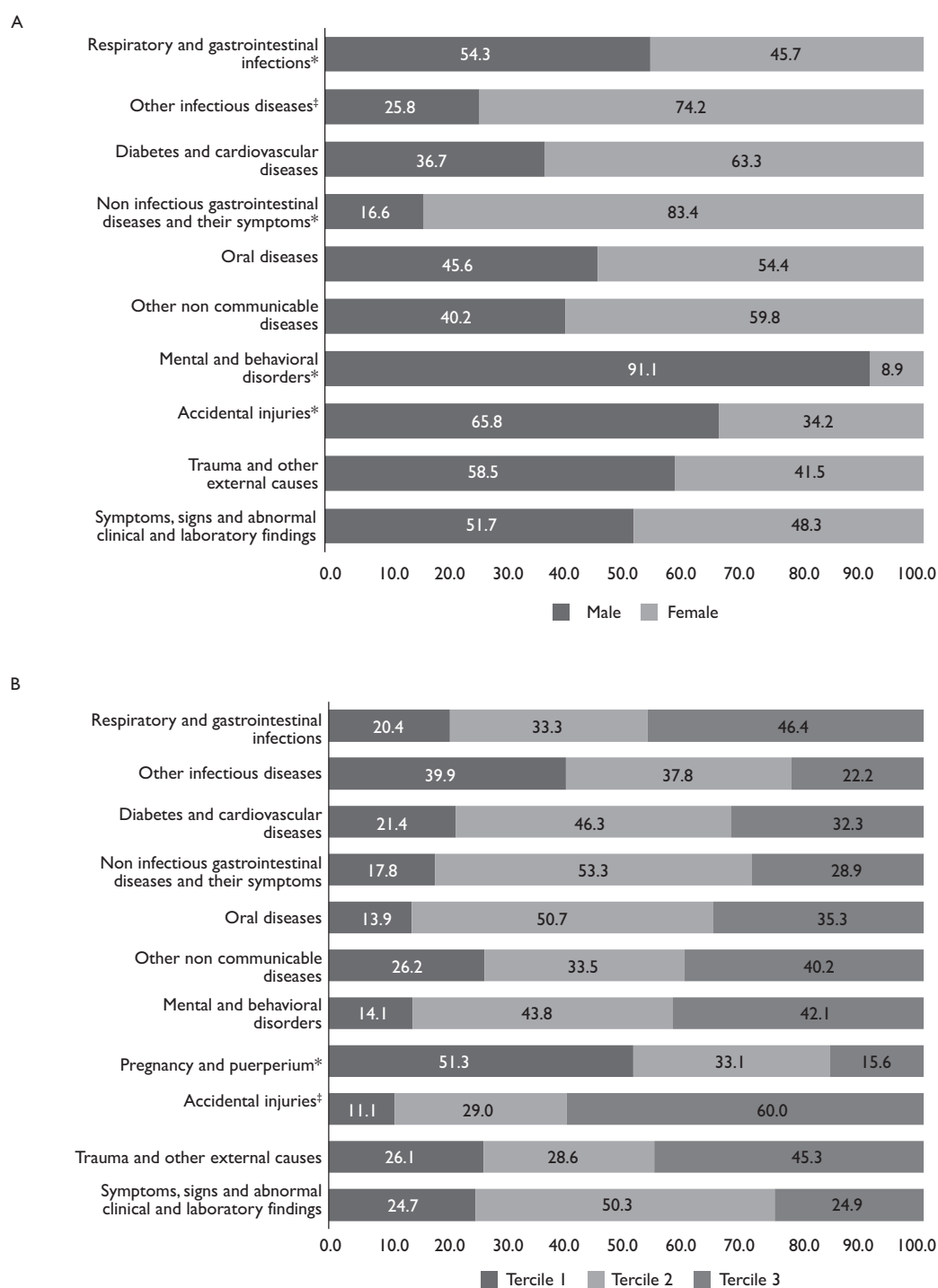
* Health professionals: included general practitioners or specialists, nurses, dentists, nutritionists and health assistants.

FIGURE 1. ANALYTICAL SAMPLE SELECTION. MEXICO, ENSANUT 2018-19

A number of authors[2,21,24,30] have suggested that adolescents use health services infrequently because they face greater obstacles, e.g., economic barriers, than other age groups. They also encounter more severe social restrictions emanating from the attitudes and beliefs of health personnel who condition the provision of specific services based on sex, age and marital status, or even requiring the presence of the parent or guardian, which constitutes a legal barrier to the provision of care. Lack of confidentiality and privacy has been identified as the main obstacles discouraging young people from using health services.[2,21,24,30] Patient-centered care and an emphasis on respect, confidentiality and privacy are key elements in encouraging greater use of health services and improving the quality of care.[2,30]

Cohabiting unions favor the use of outpatient services. Up to 82% of adolescents living in union in our study were female. It has been demonstrated that female adolescents living in union often experience early motherhood;[31] consequently, the greater use of services by these adolescents could be related to their need for antenatal care. Primary-care facilities must step up prevention activities, promoting comprehensive sexual education among adolescents and improving their offer of modern contraceptive methods.

As previously documented,[14] the selection of health provider differs by SES. High-income households use outpatient services, particularly private ones, more often than those of lower SES. In addition, highly educated heads of households use private more often than public

A

Respiratory and gastrointestinal infections*	54.3	45.7
Other infectious diseases‡	25.8	74.2
Diabetes and cardiovascular diseases	36.7	63.3
Non infectious gastrointestinal diseases and their symptoms*	16.6	83.4
Oral diseases	45.6	54.4
Other non communicable diseases	40.2	59.8
Mental and behavioral disorders*	91.1	8.9
Accidental injuries*	65.8	34.2
Trauma and other external causes	58.5	41.5
Symptoms, signs and abnormal clinical and laboratory findings	51.7	48.3

0.0   10.0   20.0   30.0   40.0   50.0   60.0   70.0   80.0   90.0   100.0

■ Male   ■ Female

B

Respiratory and gastrointestinal infections	20.4	33.3	46.4
Other infectious diseases	39.9	37.8	22.2
Diabetes and cardiovascular diseases	21.4	46.3	32.3
Non infectious gastrointestinal diseases and their symptoms	17.8	53.3	28.9
Oral diseases	13.9	50.7	35.3
Other non communicable diseases	26.2	33.5	40.2
Mental and behavioral disorders	14.1	43.8	42.1
Pregnancy and puerperium*	51.3	33.1	15.6
Accidental injuries‡	11.1	29.0	60.0
Trauma and other external causes	26.1	28.6	45.3
Symptoms, signs and abnormal clinical and laboratory findings	24.7	50.3	24.9

0.0   10.0   20.0   30.0   40.0   50.0   60.0   70.0   80.0   90.0   100.0

■ Tercile 1   ■ Tercile 2   ■ Tercile 3

Panel A. Prevalence of health needs for seeking care, by sex. Assessment of differences in the prevalence of health needs prompting a search for care, disaggregated by sex * Chi-square *p*< 0.01; ‡ Chi-square *p*< 0.10.

Panel B. Prevalence of health needs for seeking care socioeconomic terciles. Assessment of differences in the prevalence of health needs prompting a search for care, disaggregated by household socioeconomic tercile, using non-parametric-trend testing * NP trend *p*< 0.01; ‡ NP trend *p*< 0.05.

Figure 2. Prevalence of health needs prompting the search for care as self-reported by adolescent users of outpatient health services, disaggregated by sex and socioeconomic tercile. Mexico, Ensanut 2018-19

Table II
Binary and multinomial logistic-regression estimates for the use of outpatient services by adolescents, according to their socioeconomic and household characteristics.
Mexico, Ensanut 2018-19

Non-users of outpatient services: n=634	Binary logistic regression		Multinomial logistic regression*			
	Use of outpatient services		Use of outpatient services offered by public health-care providers‡		Use of outpatient services offered by private health-care providers§	
	n= 1 098		n= 476		n= 489	
Variables	OR (95%CI)	p-value	OR (95%CI)	p-value	OR (95%CI)	p-value
Socioeconomic characteristics of adolescents						
Sex						
Male	Ref.		Ref.		Ref.	
Female	0.92 (0.71,1.19)	0.519	1.07 (0.77,1.49)	0.7	0.84 (0.62,1.15)	0.277
Age (mean)	0.98 (0.93,1.03)	0.374	0.95 (0.90,1.02)	0.141	0.98 (0.92,1.05)	0.6
Educational lag						
Yes	Ref.		Ref.		Ref.	
No	1.02 (0.55,1.90)	0.946	1.14 (0.50,2.62)	0.749	0.86 (0.41,1.81)	0.695
Attending school						
No	Ref.		Ref.		Ref.	
Yes	1.05 (0.66,1.66)	0.844	0.82 (0.47,1.44)	0.494	1.04 (0.59,1.83)	0.881
Marital status						
Not married/cohabiting	Ref.		Ref.		Ref.	
Married/cohabiting	4.27 (1.54,11.82)	0.005	4.18 (1.48,11.82)	0.007	3.22 (0.94,11.00)	0.062
Health-insurance schemes						
None	Ref.		Ref.		Ref.	
Social security	1.46 (0.96,2.21)	0.075	5.67 (2.98,10.8)	0.00	0.78 (0.49,1.24)	0.286
Schemes for those lacking social security coverage	1.19 (0.79,1.79)	0.394	3.83 (2.06,7.12)	0.00	0.73 (0.47,1.15)	0.179
Other	1.26 (0.53,3.03)	0.602	1.44 (0.35,5.84)	0.613	1.15 (0.44,2.98)	0.777
Indigenous-language speaker						
Yes	Ref.		Ref.		Ref.	
No	0.92 (0.40,2.12)	0.854	0.60 (0.22,1.69)	0.336	1.43 (0.43,4.76)	0.557
Household characteristics						
Head of household						
Adolescent, his/her spouse or partner/daughter- or son-in-law	Ref.		Ref.		Ref.	
Mother/father	1.74 (0.62,4.86)	0.289	1.50 (0.46,4.90)	0.505	1.88 (0.50,7.13)	0.353
Grandparent	1.76 (0.58,5.35)	0.318	1.32 (0.36,4.84)	0.675	1.55 (0.38,6.38)	0.545
Other#	1.64 (0.48,5.61)	0.431	1.49 (0.36,6.12)	0.581	1.61 (0.38,6.94)	0.519
Head of household schooling (years)						
Elementary school or less (0-6)	Ref.		Ref.		Ref.	
Middle school - complete/incomplete (7-9)	1.15 (0.82,1.61)	0.429	0.91 (0.6,1.38)	0.653	1.45 (0.92,2.28)	0.107
High school or beyond (10 or more)	1.11 (0.72,1.70)	0.642	0.64 (0.38,1.08)	0.093	1.76 (1.07,2.90)	0.026

(continues...)

(continuation)

SES - tertiles

Low	Ref.		Ref.		Ref.	
Medium	1.14 (0.82,1.61)	0.459	1.12 (0.74,1.69)	0.603	1.14 (0.73,1.79)	0.573
High	1.59 (1.06,2.39)	0.026	1.39 (0.87,2.22)	0.167	1.94 (1.14,3.30)	0.015

Prospera social program: cash transfers and/or scholarships

No	Ref.		Ref.		Ref.	
Yes	1.43 (1.03,1.97)	0.032	1.59 (1.10,2.28)	0.012	1.21 (0.79,1.84)	0.385

Area of residence characteristics

Rural	Ref.		Ref.		Ref.	
Urban	1.02 (0.71,1.48)	0.897	0.94 (0.59,1.50)	0.8	1.00 (0.69,1.46)	0.993

Marginalization level

High/very high	Ref.		Ref.		Ref.	
Medium	1.18 (0.89,1.56)	0.255	1.14 (0.80,1.62)	0.484	1.17 (0.83,1.65)	0.36
Very low/low	1.40 (0.99,1.96)	0.05	1.69 (1.11,2.58)	0.015	1.22 (0.84,1.77)	0.297

Goodness-of-fit test: binary logistic model, *p*= 0.95; multinomial logistic model, *p*= 0.499. The models were estimated taking into account the survey design.
* There was a loss of 7% (n= 133) of observations pertaining to adolescents who failed to specify the type of provider used.
‡ Public health-care providers included social security institutions such as the *Instituto Mexicano del Seguro Social* (IMSS) (35.5%); the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE) (10.1%); the Mexican oil company *Petróleos Mexicanos* (Pemex), as well as the Social Security Institute for the members of the *Secretaría de la Defensa Nacional* (Sedena) (1.1%); and the institutions serving the population without social security coverage, such as the State Health Services (49.3%) and the IMSS *Prospera* social program (4.1%).
§ Private health-care providers included those offering services at private doctors' offices (45.2%), doctors' offices adjacent to private pharmacies (DAPPs) (51.9%) or other sites (2.9%).
# Another relative or someone to whom the adolescent had no family ties.

services. This could be linked to the inconvenience of long waiting times in public outpatient services,[7] as well as the comparative advantages of having private health services near home and access to the affordable prices offered by DAPPs for people with limited financial resources.[32] The growing relevance of DAPPs as outpatient-service providers suggests a need to regulate their activities.

Our study faced several limitations. The first concerned the cross-sectional design of the survey, which prevented us from inferring causality. The second pertained to the lack of information on those individuals who reported having health needs but refrained from seeking care, which impeded forming a more comprehensive picture of the health needs of this population. Notwithstanding the preceding limitations, our findings offer useful evidence regarding two key elements: first, adolescents refrain from using outpatient services even when perceiving the need for care. Second, in addition to providing care for adolescent needs, it is essential that primary-care services implement promotion and prevention in areas that are relevant to the present and future health of this population. These include nutrition and healthy weight, physical activity, mental well-being, informed as well as responsible sexuality and road safety.

This study contributes to enhancing the scant evidence currently available on the use of outpatient services at the national level, analyzing a representative sample of the adolescent population in an upper-middle-income country. Our work reveals that a mere 64% of adolescents with health needs receives care from health personnel, but also that the principal health needs prompting them to seek care are preventable. The Health-Care for Well-being model (MAS-*Bienestar*),[33] at the heart of the current Mexican health-system reform, recognizes the importance of promoting adolescent health. Its focus on primary health care offers an opportunity to move from a disease-care model to one centered on individuals and their needs. This approach to health opens the possibility for adolescents to raise issues during medical consultations in conditions of privacy and respect. The main challenge for MAS-*Bienestar* success lies in its implementation. Furthermore, increased financing is necessary to ensure that first-level services have the capacity and the quality of personnel necessary to provide this type of care.

Acknowledgments

Declaration of conflict of interests. The authors declare that they have no conflict of interests.

References

1. World Health Organization. Coming of age: adolescent health [Internet]. Geneva: WHO, 2019 [cited March 2023]. Available from: https://www.who.int/news-room/spotlight/coming-of-age-adolescent-health
2. Patton GC, Sawyer SM, Santelli JS, Ross DA, Afifi R, Allen NB, *et al.* Our future: a Lancet commission on adolescent health and wellbeing. Lancet. 2016;11;387(10036):2423-78. https://doi.org/10.1016/S0140-6736(16)00579-1
3. Marmot M. Social determinants of health inequalities. Lancet. 2005;365(9464):1099-104. https://doi.org/10.1016/S0140-6736(05)71146-6
4. Carrilero N, Dalmau-Bueno A, García-Altés A. Socioeconomic inequalities in 29 childhood diseases: evidence from a 1,500,000 children population retrospective study. BMC Public Health. 2021;21(1). https://doi.org/10.1186/s12889-021-11230-9
5. Shakya HB, Domingue B, Nagata JM, Cislaghi B, Weber A, Darmstadt GL. Adolescent gender norms and adult health outcomes in the USA: a prospective cohort study. Lancet Child Adolesc Health. 2019;3(8):529-38. https://doi.org/10.1016/S2352-4642(19)30160-9
6. Instituto Nacional de Estadística y Geografía. Población total por entidad federativa y grupo quinquenal de edad según sexo, serie de años censales de 1990 a 2020. Mexico: Inegi [cited March 2023]. Available from: https://www.inegi.org.mx/app/tabulados/interactivos/?pxq=Poblacion_Poblacion_01_e60cd8cf-927f-4b94-823e-972457a12d4b
7. Shamah-Levy T, Vielma-Orozco E, Heredia-Hernández O, Romero-Martínez M, Mojica-Cuevas J, Cuevas-Nasu L, *et al.* Encuesta Nacional de Salud y Nutrición 2018-19: Resultados Nacionales. Cuernavaca: Instituto Nacional de Salud Pública, 2020 [cited March 2023]. Available from: https://ensanut.insp.mx/encuestas/ensanut2018/doctos/informes/ensanut_2018_informe_final.pdf
8. Gobierno de México. Anuario de Morbilidad 1984-2022. Morbilidad por grupo de edad. Mexico: Gobierno de México, 2021 [cited March 2023]. Available from: https://epidemiologia.salud.gob.mx/anuario/html/morbilidad_grupo.html
9. Villalobos A, Hubert C, Hernández-Serrato MI, de la Vara-Salazar E, Suárez-López L, Romero-Martínez M, *et al.* Adolescent motherhood in under 100 000 inhabitants communities in the first decades of the millennium. Salud Publica Mex. 2019;61(6):742-52. https://doi.org/10.21149/10553
10. Hidalgo-Solórzano E, Pérez-Núñez R, Mojarro FR, Vera-López JD, Híjar M. Non-fatal unintentional injuries in Mexican population: prevalence and associated factors. Ensanut 2018-19. Salud Publica Mex. 2020;62(6):829-39. https://doi.org/10.21149/11563
11. Centro Nacional de Equidad de Género y Salud Reproductiva. Modelo de Atención Integral a la Salud Sexual y Reproductiva para Adolescentes (MAISSRA). Mexico: Centro Nacional de Equidad de Género y Salud Reproductiva, 2017 [cited March 2023]. Available from: https://www.gob.mx/salud/cnegsr/documentos/modelo-de-atencion-integral-a-la-salud-sexual-y-reproductiva-para-adolescentes-maissra-135795
12. Knaul FM, Frenk J. Health insurance in Mexico: achieving universal coverage through structural reform. Health Aff (Millwood). 2005;24(6):1467-76. https://doi.org/10.1377/hlthaff.24.6.1467
13. Grupo Interinstitucional para la Prevención del Embarazo en Adolescentes. Estrategia Nacional para la Prevención del Embarazo en Adolescentes. Mexico: Gobierno de México, 2018 [cited March 2023]. Available from: https://www.gob.mx/conapo/documentos/documento-oficial-de-la-estrategia
14. Bautista-Arredondo S, Serván-Mori E, Colchero MA, Ramírez-Rodríguez B, Sosa-Rubí SG. Analysis of outpatient healthcare utilization in the

context of the universal healthcare coverage reform in Mexico. Salud Publica Mex. 2014;56(1):18-31 [cited March 2023]. Available from: https://www.saludpublica.mx/index.php/spm/article/view/7319/9594
15. Colchero MA, Gómez R, Bautista-Arredondo S. Characterization of the "primary health care cascade" in public services in Mexico in localities with less than 100 000 inhabitants. Salud Publica Mex. 2019;61(6):734-41. https://doi.org/10.21149/10570
16. Villalobos A, de Castro F, Rojas R, Allen B. Contraception in Mexican adolescents in upper secondary schools: use and unmet needs. Salud Publica Mex. 2017;59(5):566-76. https://doi.org/10.21149/8481
17. Adongo W, Asaarik MJ. Health seeking behaviors and utilization of healthcare services among rural dwellers in under-resourced communities in Ghana. Int J Caring Sci. 2018;11(2):840-50 [cited March 2023]. Available from: https://www.internationaljournalofcaringsciences.org/docs/25_adongo_original_10_2.pdf
18. Bradshaw J. A taxonomy of social need. In: Mclachlan G, ed. Problems and progress in medical care: essays on current research, volume 7th series. London: Oxford University Press, 1972.
19. Rodriguez-Santana I, Mason A, Gutacker N, Kasteridis P, Santos R, Rice N. Need, demand, supply in health care: working definitions, and their implications for defining access. Health Econ Policy Law. 2023;18(1):1-13. https://doi.org/10.1017/S1744133121000293
20. Levesque JF, Harris MF, Russell G. Patient-centred access to health care: conceptualising access at the interface of health systems and populations. Int J Equity Health. 2013;12. https://doi.org/10.1186/1475-9276-12-18
21. World Health Organization. Handbook for conducting an adolescent health services barriers assessment (AHSBA) with focus on disadvantaged adolescents. Geneva: WHO, 2019 [cited March 2023]. Available from: https://www.who.int/publications/i/item/9789241515078
22. Romero-Martínez M, Shamah-Levy T, Vielma-Orozco E, Heredia-Hernández O, Mojica-Cuevas J, Cuevas-Nasu L, *et al.* National Health and Nutrition Survey 2018-19: methodology and perspectives. Salud Publica Mex. 2019;61(6):917-23. https://doi.org/10.21149/11095
23. Ávila-Burgos L, Montañez-Hernández JC, Cerecer-Ortiz N, Hubert C, Heredia-Pi I, Suárez-López L, Villalobos A. Adolescent use of outpatient health services in Mexico: their health needs and associated factors. Appendix. Health needs prompting the search for care by category: adolescents using outpatient services, Ensanut 2018-19. Fisgshare, 2023. https://doi.org/10.6084/m9.figshare.24201486.v1
24. Stierman EK, Kalbarczyk A, Oo HNL, Koller TS, Peters DH. Assessing barriers to effective coverage of health services for adolescents in low- and middle-income countries: a scoping review. J Adolesc Health. 2021;69(4):541-8. https://doi.org/10.1016/j.jadohealth.2020.12.135
25. Instituto Nacional para la Evaluación de la Educación. Panorama Educativo de México. Indicadores del Sistema Educativo Nacional 2018. Educación básica y media superior. Mexico: INEE, 2019 [cited March 2023]. Available from: https://www.inee.edu.mx/wp-content/uploads/2019/08/P1B117.pdf
26. Lister NB, Baur LA, Felix JF, Marcus C, Reinehr T, Summerbell C, Wabitsch M. Child and adolescent obesity. Nat Rev Dis Primers. 2023;9(1). https://doi.org/10.1038/s41572-023-00435-4
27. Boerma T, Hosseinpoor AR, Verdes E, Chatterji S. A global assessment of the gender gap in self-reported health with survey data from 59 countries. BMC Public Health. 2016;16. https://doi.org/10.1186/s12889-016-3352-y
28. World Health Organization. Mental Health Atlas 2020. Geneva: WHO, 2021 [cited March 2023]. Available from: https://www.who.int/publications/i/item/9789240036703
29. Gutiérrez JP, Rivera-Dommarco J, Shamah-Levy T, Villalpando-Hernández S, Franco A, Cuevas-Nasu L, *et al.* Encuesta Nacional de Salud y Nutrición 2012. Resultados Nacionales. Cuernavaca: Instituto Nacional de Salud Pública, 2012 [cited March 2023]. Available from: https://ensanut.insp.mx/encuestas/ensanut2012/doctos/informes/ENSANUT2012ResultadosNacionales.pdf

30. Tylee A, Haller DM, Graham T, Churchill R, Sanci LA. Youth-friendly primary-care services: how are we doing and what more needs to be done? Lancet. 2007;369(9572):1565-73. https://doi.org/10.1016/S0140-6736(07)60371-7

31. Perez-Amador J, Giorguli S. Child marriage and early transitions to adulthood in Mexico. In: Verma S, Petersen A, eds. Developmental science and sustainable development goals for children and youth. Social Indicators Research Series, vol 74. Springer, Cham, 2018:239-56. https://doi.org/10.1007/978-3-319-96592-5_13

32. Pérez-Cuevas R, Doubova SV, Wirtz VJ, Servan-Mori E, Dreser A, Hernández-Ávila M. Effects of the expansion of doctors' offices adjacent to private pharmacies in Mexico: secondary data analysis of a national survey. BMJ Open. 2014;4(5):1-11. https://doi.org/10.1136/bmjopen-2013-004669

33. Diario Oficial de la Federación. Acuerdo por el que se emite el Modelo de Atención a la Salud para el Bienestar (MAS-Bienestar). Mexico City: Secretaría de Gobernación, 25 octubre de 2022 [cited March 2023]. Available from: https://www.dof.gob.mx/nota_detalle.php?codigo=5669707&fecha=25/10/2022#gsc.tab=0