Adaptation and validation of a self-report measure of youth-friendly primary healthcare services

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Abstract

Aim: To adapt the Youth‐Friendly Health Services‐World Health Organization+ questionnaire to suit the health needs of youth in the South African context, and estimate its psychometric properties.

Background: Youth-friendly health services promote health-seeking behavior amongst young people. The perceptions of youth and adolescents are thus important whilst assessing the youth-friendliness of health services.

Methods: We conducted six focus group interviews to evaluate the clarity and relevance of the questionnaire items and adapted the questionnaire accordingly. The adapted questionnaire was administered to 101 youth who visited primary healthcare clinics. We reduced the number of items through quantitative analysis of responses and item analysis. Cronbach's α was used to optimize internal consistency reliability. Experts established a baseline of youth-friendliness. We ranked the responses from the youth against the baseline of youth-friendliness and used independent two sample *t*-test to test for construct validity of the final adapted version, titled Youth-Friendly Health Services- South Africa.

Results or Findings: After the focus group interviews, we rephrased 27 items, removed 4 items and added 8 items. We reduced the questionnaire to 57 items while optimizing internal consistency reliability. The statistical analysis supported construct validity.

Conclusion: The Youth-Friendly Health Services- South Africa is the first English validated version and demonstrates good psychometric properties.

Implication for Nursing and Health Policy: The Youth-Friendly Health Services- South Africa can be useful to evaluate the youth's satisfaction with the healthcare and nursing service they receive. The study shows that the original questionnaire can be adapted for use in different contexts to shape local and global nursing practice and policies.

Keywords: Construct validity, Primary healthcare, Questionnaire adaptation, South Africa, Validity, Youth-friendliness, YFHS-SA, YFHS-WHO+ questionnaire

Introduction

Young people (aged 15-24) comprise a valuable and growing sector of the global population but are at an increased risk for morbidity and mortality related to sexual and reproductive health problems, unintentional and intentional injuries, mental health problems and other communicable and non-communicable diseases (Nair et al. 2015; UNFPA 2014). Athough this age group are most severely affected by HIV/AIDS, treatment progress still lacks behinds (Morris et al. 2015; Gleeson et al. 2018). Youth should be encouraged to seek healthcare and need healthcare services that are developmentally appropriate and provide a safe environment where they can share sensitive concerns, such as risk-taking behaviour or sexual health concerns (Fuzell et al. 2016; Harrison et al. 2017). Youth-friendly health services (YFHS) are tailored according to the demands of the youth (WHO 2002) and should be accessible, acceptable and appropriate to the youth, improve the health of young people and be equitably provided (WHO 2012). Many YFHS have emerged worldwide and the effectiveness of such youth-friendly initiatives have been assessed with a variety of instruments of which only some have been validated (Tylee et al. 2007; Mazur et al. 2018). Few instruments have measured the perceptions of the youth with regard to youth-friendliness despite the growing concept of patient-centred care that recognises the patient's own values and perceptions (Ambresin et al. 2013). Recognising this need, an international team of experts developed The Youth-Friendly Health Services-World Health Organization+ questionnaire (YFHS-WHO+ questionnaire) (Haller et al. 2012). The YFHS-WHO+ questionnaire was originally developed for use in a cluster randomized trial to rebuild primary care in post-war Bosnia and Herzegovina (Haller et al. 2012). We adapted and validated the YFHS-WHO+ questionnaire to measure the perceptions of the youth regarding the youth-friendliness of primary healthcare (PHC) services in South Africa. PHC services are the first level of contact with

the publicly-funded healthcare system and the majority South Africans (including the youth) depend on publicly-funded healthcare. PHC services are in an ideal position to provide preventative healthcare services such as screening and health education. The principles of YFHS however apply to all levels and settings of health services provided to young people.

Background

The South African youth is socio-economically vulnerable and many of them fail to enter young adulthood successfully (NYDA 2015). Many young people in South Africa experience sexual and reproductive health disorders, violence, trauma and injuries, as well as non-communicable diseases (Panday et al. 2013). Young South Africans, aged 15-24 have one of the highest HIV prevalence in the world and a tenth of the youth population would have had their first sexual experience before the age of 15 (Shisana et al. 2014). In South Africa, youths engage in high risk sexual behaviour, mainly, due to a lack of knowledge (Mchunu et al. 2012).

In 1999, the first official initiative to improve the quality of services to young people in South Africa commenced, namely, the National Adolescent Friendly Clinic Initiative (NAFCI) (Dickson et al. 2007). The NAFCI recognised the need to improve the sensitivity of publicly-funded services to young people (Ashton et al. 2009). Publicly-funded PHC clinics provide the full range of healthcare services to all age groups and quality improvement programmes (such as youth-friendly initiatives) are integrated with the mainstream of care. PHC services are nurse driven with few clinics having permanent and some visiting medical doctors. A reviewed policy, the National Adolescent and Youth Health Policy, was recently published and aimed to include young people from age 10 to 24 years to mitigate risk factors and allow for early detection (Hodes et al. 2017). Three studies conducted in urban and rural South Africa qualitatively evaluated the perceptions of young people with regards to youth-friendliness of the healthcare services they received (Geary et al. 2014; Geary et al. 2015; Schriver et al. 2014). In general, young people were dissatisfied

with the healthcare services. Young people were dissatisfied with long waiting queues, unfriendly and judgemental healthcare providers, staff shortages, lack of equipment and drugs, lack of privacy and confidentiality and the provision of inadequate information (Geary et al. 2015; Schriver et al.2014; Geary et al. 2014). The dissatisfaction was compounded by a lack of awareness of youth-friendly programs (Schriver et al. 2014). Scaling up youth-friendly programs requires effective awareness campaigns in conjunction with effective instruments to measure satisfaction amongst the youth. The YFHS-WHO+ questionnaire is a valuable quantitative measure of youth-friendliness from the perspective of youth themselves.

Aims

This study aims to (1) adapt the existing YFHS-WHO+ questionnaire to suit the health needs of youth in the South African context and (2) estimates the psychometric properties of the adapted YFHS-WHO+ questionnaire.

Methods

Focus group interviews were conducted to adapt the questionnaire, from April to May 2014. Data were collected, using the adapted questionnaire, from June to September 2014. Construct validity was based on testing the following hypotheses:

1. There is no difference between youth perceptions and experts' scores in the measurement of youth-friendly primary healthcare services.
2. Primary healthcare services with higher scores of youth-friendliness differ from primary healthcare services with lower scores of youth-friendliness.

We tested these hypothesis using baseline friendliness scores based on experts' evaluations of the youth-friendliness of healthcare services. Youth perceptions were based on youth scores calculated from the adapted questionnaire.

The questionnaire

The YFHS-WHO+ questionnaire was developed by Dr DM Haller and her team from two existing instruments, namely the adolescent client interview tool from the WHO Assessment Guidebook (WHO 2009) and an Australian questionnaire that assesses youth-friendliness of primary care services (Haller et al. 2012). Face validity is supported by the use of both these instruments in various international settings (Haller et al. 2012). Both instruments were developed in English (Haller et al. 2012) and the YFHS-WHO+ questionnaire remained English for this study due to the multifarious character of the youth population in the study context. Most young people in the study context are able to speak English. The YFHS-WHO+ questionnaire comprehensively measures youth-friendliness against the five WHO domains of YFHS namely accessibility, acceptability, equitability, appropriateness and effectiveness (Haller et al. 2012)

Phase 1: Adaptation of the YFHS-WHO+ questionnaire

Prior to focus group interviews, we adapted terminology and merged items to ensure face validity for the study context. The response format remained a combination of Likert- and nominal-scales. We collected information regarding demographics, level of education, the respondent's first language and previous visits to the clinic.

We conducted six focus group interviews with between 2 to 7 youth aged 18 to 24 years who visited four different PHC clinics in an urban health district. The four clinics were purposively selected to have comfortable venues for focus group interviews and allow for convenience sampling of youth from different cultural groups. The youths had to be able to read and be conversant in English. Similar responses were obtained for most items after six focus group interviews and the total sample size grew to 25 respondents. Most of the 25 respondents were female (84%) (*n*= 21) and Black African (96%) (*n*=24). The mean age was 21.76 years (SD 1.45),

and ages ranged from 18 to 24 years. Most of the 25 respondents had a level of education higher than Grade 12 (76%) (*n*=19) and Sepedi was spoken the most as first language (34.8%) (*n*=8). Most of the 25 respondents had visited the clinic before (84%) (*n*=21).

The group facilitators asked respondents to rephrase items for better understanding; to remove or add items. Items were adapted if there was consensus between at least two groups. If there was no agreement after the last discussion, we reviewed the responses to identify the most suitable formulation of the item.

Phase 2: Reliability and validity evaluation

Experts' scores

Three experts evaluated the youth-friendliness of ten PHC clinics in an urban health district in South Africa with the aim to identify the most and least youth-friendly clinics. These ten clinics were selected with the help of the top manager of these services who judges these clinics to represent varying degrees of youth-friendliness. The three experts conducted face-to-face interviews with 12-19 key informants per clinic. Sampling and interviewing were guided by the *WHO 2009 Quality Assessment guidebook: a guide to assessing health services for adolescent clients* (WHO 2009). Each expert aimed to interview the following key informants: the facility manager, healthcare provider (referring to a professional nurse), any of the following support staff (receptionist/clerk/cleaner/security guard) and other patients older than 24 years. Each expert aimed to interview at least three youth. A baseline score was determined for each clinic as the mean of the total scores of the three experts. The distribution of the baseline scores was determined to identify extremities (most youth-friendly and least youth-friendly clinics) for hypothesis testing.

Youth's score

Youths, between 18 and 24 years old, who visited the four clinics that were identified through the expert's evaluations as the most and least youth-friendly, were asked to complete the adapted YFHS-WHO+ questionnaire following informed consent. We purposively sampled youth who had visited the clinic at least once before and who were conversant in English. We approached all the youths who were available at the time. We approached potential participants before their consultations, to give them the opportunity to complete the questionnaire without discomforting them. Respondents completed the questionnaire themselves. A research assistant provided support where needed to complete the questionnaire (e.g. a mother holding a baby). Hundred and two questionnaires (23; 25; 26 and 28 respectively for each selected clinic) were returned. The sample size was estimated based on recommended sample size for item analysis (Streiner et al. 2015).

Most respondents (n=73, 71.6%) visited the clinic in the three months prior to data collection. Most of the respondents were female (85.3%) (*n*=87) and Black African (91.2%) (*n*=93). Representation of the White (5.9%) (*n*=6), Coloured (2.9%) (*n*=3) and Indian or Asian population (*n*=0) (0%) was limited. The mean age of the respondents was 20.93 years (SD=1.83), and ages ranged from 18 to 24 years. Most of the respondents had some or had completed secondary education (62.7%) (*n*=64). Most respondents indicated that Sepedi was their first language (20.6%) (*n*=20).

Data were analysed using IBM SPSS version 23.0. Frequencies of responses were calculated across the 102 questionnaires. Items with few responses (<20%) were removed (Polit et al. 2016). Within each subscale, we identified and removed redundant items. Items were redundant if mean values differed ≤ 0.05. Items with a poor inter-item correlation (≤0.275), a poor corrected item-total correlation (≤0.3) and with a high endorsement frequency of one response alternative were also considered for removal. We only removed items if the internal consistency reliability of the subscale was maximized (Cronbach's alpha≥0.7) but contextual relevance maintained.

The item responses were scored. Positive responses to items remaining in the adapted YFHS-WHO+ questionnaire (e.g. “definitely”) received a higher value and reflected youth-friendliness. Negative responses (e.g. “definitely not”) received a lower value and reflected less youth-friendliness. We added the scores and calculated a mean youth score for each clinic.

Ethical consideration

The developers of the YFHS-WHO+ questionnaire granted permission to adapt the questionnaire. The Faculty of Health Sciences Research Ethics Committee of the University of Pretoria (protocol nr. 342/2013) and the Tshwane/ Metsweding Regional Research Ethics Committee (project nr. 02/2014) approved the study. Participation was voluntary and respondents signed written informed consent. Respondents were informed of the aim and methods of the study and they could withdraw or refuse to participate at any time without consequences to their treatment at the clinic. Respondents were assured that their information would be treated confidentially and their responses would remain anonymous.

Findings

Questionnaire adaptation

Following the six focus group interviews, we rephrased 27 items. We replaced words with better understood synonyms for example, “tiredness” instead of “fatigue”. We rephrased a few items by adding words, for example, “prevention of pregnancy” was added after the word “contraception”.

We removed four irrelevant items. For example, the item “Were you or your parents asked to pay for the services you received in this facility?” was deemed irrelevant because PHC clinics in South Africa provide free services to the youth (Engelbrecht et al. 2012).

Four items were duplicated to separately measure perception of services provided by nurses and doctors, which may be perceived differently depending on the context (Schriver et al. 2015). We added four items allowing for the variety of queuing systems and floor plans. Some clinics had separate queues for registration, consultation and for collecting medicine from the pharmacy. Other clinics had a combined queue for registration and consultation and at some clinics, medication was dispensed during consultation.

We adapted some response alternatives on the Likert scale to improve measurement. We removed the 'don't know' response alternatives that may lead to neutral responses. We created an additional subscale by separating three items that did not align with the existing subscale items. The adapted YFHS-WHO+ questionnaire comprised of 11 subscales with 101 items.

Reliability and validity evaluation

Experts' scores

Expert baseline scores were normally distributed (Shapiro-Wilks, W = 0.92, p = 0.42). Baseline scores lying outside one SD indicated two contrasting groups. Least youth-friendly clinics had expert scores of -1.27 (clinic A) and -1.19 (clinic B). Most youth-friendly clinics had expert scores of 1.47 (clinic C) and 1.51 (clinic D).

Youth's scores

Fewer than 20% of respondents responded to items 57 and 92. Item 57 was removed. Item 92 was retained, as it invited suggestions for improving services to young people and fulfils the WHO Global standard that adolescents should be involved in planning and evaluation of health services (Nair et al. 2015).

Item analysis results are shown in Table 1. Five individual items were not analysed since they did not belong to a subscale. Several items in subscales 1, 3, 6, 8, 10 and eleven had similar mean

values and related meanings to other items in the same subscale. These subscales (except subscale 3) also had high Cronbach's alpha values (>0.85), suggesting redundancy (Streiner et al. 2015) as shown in Table 2. The redundant items were removed and only the most relevant and informative items were kept.

Some items in subscales 8, 9, 10 and 11 were deemed relevant for measuring youth-friendliness, and retained despite results indicating otherwise. For example, item 64 measures the youth's perception of receptionists. Item 64 therefore addresses the YFHS characteristics "Support staff treats all adolescent clients with equal respect, regardless of status" (WHO 2012).

We considered the structure of the questionnaire by keeping items in subscale 4 and subscale 9 in a similar pattern to previous subscales. The items measuring the perception of care provided by doctors and nurses were separated, except items 93-101, since most of these item responses had mean values that differed by more than 0.05. The length of the questionnaire was shortened by merging three items in subscale one that all represented substance abuse behaviour. Two item was removed for a high endorsement frequency of a response alternative.

We removed two subscales. The items in subscale 2 had poor inter-item correlations and advertisement yield little reference to the youths' perception of the youth-friendliness of the clinic. Young people often visit the closest clinic due to financial restrictions for transport (Nteta et al. 2010; Schriver et al. 2015). The results of subscale 4 and 5 were similar (parental support and community support) and subscale 5 was subsequently removed.

The Cronbach's alpha, after removal of items, ranged between 0.725 - 0.935 for 8 subscales (Table 2). The lower Cronbach's alpha for Subscale 3 (0.638) was acceptable since the subscale included only two items (Streiner et al. 2015).

Hypothesis testing

Hypothesis 1:

Experts' scores of youth-friendliness corresponded to the perceptions of the youth regarding youth-friendliness (Table 3). According to experts and the youth, clinics C and D were the most youth-friendly and clinics A and B were the least youth-friendly.

Hypothesis 2: The youth perception scores of youth-friendliness were significantly higher for clinics C and D compared to clinics A and B ($t= 2.99$, p-value = 0.003).

Discussion

We adapted the existing YFHS-WHO+ questionnaire by removing four unsuitable items and adding eight new items to improve the accuracy of measurement. We rephrased 27 items, mostly by replacing a word with a similar but better understood word. These changes represent the South African context and the meaning of the original YFHS-WHO+ questionnaire was not changed. South African youth in urban areas also experience the universal barriers to receiving friendly healthcare services.

The questionnaire was further reduced to 57 items within 9 subscales. In comparison to the original adaptation study for the context of Bosnia and Herzegovina (Haller et al. 2012), this study kept subscale "equity B" but also removed the subscale "community support". Most of the items removed, had similar mean values and related meaning to other items within the same subscale and allowed for reduction of the questionnaire length. Shorter questionnaires are preferred and completed with greater accuracy opposed to lengthy questionnaires. The contextual relevance and usefulness as measure of youth-friendliness were considered before removing or retaining an item.

Expert evaluations and youth perceptions identified the same clinics as being either youth-friendly or not. The expert evaluations established a baseline of youth-friendliness since no golden standard of youth-friendliness existed in the context. The final adapted South African version of the YFHS-WHO+ questionnaire (YFHS-SA), therefore measures youth-friendliness as it is supposed to, supporting its construct validity. Measurement with the YFHS-SA also distinguished between the most and least youth-friendly PHC clinics, supporting its accuracy.

The PHC clinics perceived more youth-friendly offered youth-friendly programmes and had dedicated rooms for youth activities (referred to as 'chill rooms') compared to the PHC clinics perceived less youth-friendly. The PHC clinics perceived less youth-friendly were crowded, less appealing and patients waited long for consultation. The less youth-friendly clinics did not have adolescent and youth specific reading material such as pamphlets or posters and generally perceived nurses as rude and judgemental. Although the more youth-friendly clinics were focussed on the youth, several aspects still required improvement. We found that dedicated youth healthcare services were often challenged by competing health priorities combined with staff shortages. The youth suggested that healthcare services can improve if they receive more health education; nurses are less rude and judgemental and waiting times are reduced.

Implications for Nursing and Health Policy

Although most public PHC clinics in South Africa are within walking distance, it is often found less acceptable in terms of the attitudes of nurses, long waiting queues and the lack of health educational. These findings compare to the barriers experienced by youth in other countries and contexts (Newton-Levinson et al. 2016) and require of nurses to continuously evaluate the youth's satisfaction with the care they receive. The YFHS-WHO+ questionnaire is a comprehensive self-report measure that provides sound and quantifiable evidence of the youth's satisfaction with the quality of healthcare services delivered to them. Self-report questionnaires are cost-effective and

allow for anonymity. This study and other similar studies (Haller et al. 2012; Malm et al. 2017) shows that the YFHS-WHO+ questionnaire can be adapted for use in different contexts. Nurses in practice and policymakers can use the results measured with an adapted YFHS-WHO+ questionnaire to focus improvement efforts, measure youth-friendly initiatives over time and ensure contextual relevance of policies related to adolescent and youth healthcare services. Wider use could shape healthcare services and policies to provide sufficient quality care for all young people and contribute towards universal health coverage as a cornerstone of health and development policy (Tomblin-Murphy et al. 2016).

There is a need for the consistent use of a measurement instrument across contexts to compare the effectiveness of YFHS (Mazur et al. 2018). The YFHS-WHO+ questionnaire provides sound evidence and allows for comprehensive measurement against all five the WHO domains of youth-friendless. Wider use of the YFHS-WHO+ questionnaire could therefore allow for global comparison, prioritization and standardization of indicators of effectiveness and shape global health policies. The sound evidence would guide governments, policymakers and managers to allocate resources efficiently. Although literature shows similarities, each context is unique and would require individual country results. This study could provide guidance to these future validation studies.

Limitations

Our adaptation of the YFHS-WHO+ questionnaire is specific to a multicultural urban context. Most respondent spoke Sepedi as first language and the adaptation might differ for people with English as first language, possibly requiring less rephrasing. Only the youth patients visiting the clinic participated in the study and most were female. Male youths, however, experience unique needs such as the need for drug counselling (Otwombe et al. 2015). Future studies could focus on adaptation involving more male youth and could include rural contexts.

Conclusion

The YFHS-SA accurately measures the youth's perception of PHC services against all five the domains of youth-friendliness, namely accessibility, acceptability, equitability, appropriateness and effectiveness. We reduced the length of the questionnaire to 57 items to include only the most relevant and informative items, removing time constraints and providing greater accuracy. The YFS-SA is also the first English validated version of the original YFHS-WHO+ questionnaire and can be used effectively to measure the youth's satisfaction with healthcare in South Africa and similar contexts. The YFHS-SA can be used as a patient satisfaction measure after service delivery; to monitor the progress of youth-friendliness initiative; for empirical research and to inform policies concerning youth health. The YFHS-SA is a psychometrically sound instrument and contributes to the validity of the original YFHS-WHO+ questionnaire. Using the YFHS-WHO+ questionnaire in multiple international contexts add to the international knowledge of youth's perceptions of healthcare services and could contribute to the development of a minimum set of indicators for global measurement of youth-friendliness. Rigorous pre-data collection adaptation is however required for each context to ensure accurate measurement. We recommend that future studies align the YFHS-WHO+ questionnaire with evolving global standards for adolescent and youth-health services and provide clear description of the study context and adaptations to allow for identification of similarities and differences.

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Table 1 Item analysis results of the adapted YFHS-WHO+ questionnaire.

Items	*Mean*	*SD*	*Corrected item-total correlation*	*Cronbach's α if item deleted*
Subscale 1: Access A				
If you had one of the following complaints would you get help in this clinic:				
1: Physical complaint for example stomach ache, cough, sore throat, skin problems (such as pimples), fever, tiredness, painful or irregular periods,...	3.45	.772	.460	.900
2: Injuries for example sport injuries,...	3.13	.953	.566	.896
3: Some very private or sensitive concerns (such as questions about sexual orientation or about depression).	3.04	.987	.620	.894
4: Concerns related to sexual health (questions or fears about pregnancy, questions about sexually transmitted infections, including HIV).	3.35	.894	.655	.893
5: Questions about contraception (prevention of pregnancy).	3.49	.835	.470	.899
6: Concerns in relation to your friends or your boy/ girlfriend.	2.62	1.038	.561	.896
7: Smoking cigarettes and wanting to stop.	2.67	1.031	.600	.894
8: Problem related to alcohol.	2.63	1.060	.683	.891
9: Problem with marijuana (dagga), nyaope or other drugs.	2.63	1.106	.662	.892
10: Problem with your parents or family.	2.56	1.055	.543	.897

11: Problems related to work, school or university/ college.	2.29	1.097	.568	.896
12: Problems related to your eating habits, exercise or sleep.	2.93	1.052	.604	.894
13: If you felt sad, depressed or nervous, or if you had suicidal thoughts.	2.65	1.115	.651	.892
14: Problems related to violence (being a violent person or being a victim of violence or abuse).	2.57	1.066	.680	.891
Subscale 2: Access B				
How did you learn you could get help for these health problems in this clinic?				
15: Through clinic staff.	1.51	.503	.320	.775
16: Through a youth group.	1.81	.395	.415	.760
17: Through your religious community.	1.77	.421	.576	.738
18: Through flyers/ pamphlets describing the clinic.	1.54	.502	.412	.761
19: Through the radio, TV, newspapers or magazines.	1.73	.449	.502	.748
20: Through the internet.	1.70	.460	.454	.754
21: Through friends.	1.51	.503	.353	.770
22: Through school (school staff or activities at school).	1.55	.501	.714	.712
23: Through family members.	1.37	.485	.415	.760
Table 1 *Continued*				

Items	*Mean*	*SD*	*Corrected item-total correlation*	*Cronbach's α if item deleted*
Subscale 3: Access C				
25: How do you rate the hours this clinic is open for service?	2.78	1.272	.567	.807
80: Thinking of the last time you wanted to use this clinic, how quickly were you attended to? **81: How do you rate this?**	2.42	1.136	.595	.797
82: How long do you usually have to wait in the waiting room at the reception (to receive your file)? **83: How do you rate this?**	3.15	1.173	.708	.764
84: How long do you usually have to wait in the waiting room for your consultation to begin? **85: How do you rate this?**	3.08	1.185	.677	.773
86: How long do you usually have to wait in the waiting room to receive medication at the pharmacy? **87: How do you rate this?**	2.58	1.106	.559	.807
88: If you need to see a doctor/ nurse urgently (due to an emergency) do you get to be seen on that same day in this clinic?	Removed due to high endorsement frequency of one response alternative			
Subscale 4: Parental support				

If your parents or another significant adult in your family knew you had one of the following complaints, would they encourage you to get help for it in this clinic?				
26: Physical complaint for example stomach ache, cough, sore throat, skin problems (such as pimples), fever, tiredness, painful or irregular periods.	3.31	.902	.417	.842
27: Concerns related to sexual health (for example questions or fears about pregnancy, questions about sexually transmitted infections).	3.30	1.000	.584	.814
28: Problems related to alcohol, cigarette or drug use.	2.80	1.110	.703	.789
29: Problems related to work, school or university/ college.	2.29	1.121	.648	.800
30: If you felt sad, depressed or nervous, or if you had suicidal thoughts.	2.62	1.090	.619	.807
31: Problems related to violence (being violent yourself or being a victim of violence or abuse).	2.58	1.188	.682	.793
Subscale 5: Community support				
If another adult in your community (at school, friends, neighbours,...) knew you had one of the following complaints would they encourage you to get help for it in this clinic?				
32: Physical complaint for example stomach ache, cough, sore throat, skin problems (such as pimples), fever, tiredness, painful or irregular periods.	3.29	.931	.382	.857

33: Concerns related to sexual health (for example questions or fears about pregnancy, questions about sexually transmitted infections).	3.21	.959	.535	.832

Table 1 *Continued*

Items	*Mean*	*SD*	*Corrected item-total correlation*	*Cronbach's α if item deleted*
34: Problems related to alcohol, cigarette or drug use.	2.64	1.051	.683	.804
35: Problems related to work, school or university/ college.	2.30	1.064	.674	.806
36: If you felt sad, depressed or nervous, or if you had suicidal thoughts.	2.59	1.110	.729	.793
37: Problems related to violence (being violent yourself, or being victim of violence or abuse).	2.51	1.135	.718	.796
Subscale 6: Equity A				
Here are some reasons for which young people might not have received proper care. For each of these do you think it could happen in this clinic?				
38: Because they are too young?	3.12	1.045	.645	.963
39: Because they are too old?	3.24	.920	.703	.962
40: Because they are a boy?	3.28	.903	.877	.959
41: Because they are a girl?	3.38	.883	.870	.959
42: Because of their cultural background?	3.33	.951	.805	.960

43: Because of their social background (where they come from: rural or urban; too rich or too poor...)?	3.38	.883	.777	.960
44: Because of their religion?	3.40	.858	.815	.960
45: Because of the way they dress or the way they look?	3.37	.882	.819	.960
46: Because they live on the street?	3.35	.891	.804	.960
47: Because they are not married (with or without children)?	3.36	.906	.743	.961
48: Because they are gay/ lesbian/ bisexual?	3.42	.833	.847	.959
49: Because they have a disability (for example hearing problems, blindness or physical disability)?	3.50	.793	.832	.960
50: Because they have a mental illness?	3.43	.888	.764	.960
51: Because they are drug users?	3.26	1.008	.604	.964
52: Because they are violent?	3.15	.988	.751	.961
53: Because they are sex workers?	3.29	.931	.761	.961
Subscale 7: Equity B				
Do you think young people might not visit this clinic because…				
54: They fear their parents could find out or not agree of the visit?	1.66	.475	.579	.517
55: They fear the school principal or staff could find out of the visit?	1.83	.381	.620	.416
56: They fear the police will know of the visit?	1.95	.228	.407	.725
57: Other (please detail)	Removed since > 20% did not respond to the item			

Table 1 *Continued*

Items	*Mean*	*SD*	*Corrected item-total correlation*	*Cronbach's α if item deleted*
Subscale 8: Respect				
Thinking about your last (most recent) consultations at this clinic…				
58: How do you rate the way you felt treated by the doctor?	3.77	1.276	.792	.889
59: How do you rate the level of trust you have in this doctor?	3.83	1.076	.798	.890
60: When you were with this doctor how comfortable did you feel?	3.73	1.227	.741	.895
61: How do you rate the way you felt treated by the nurse?	3.60	1.197	.836	.885
62: How do you rate the level of trust you have in this nurse?	3.39	1.277	.818	.886
63: When you were with this nurse how comfortable did you feel?	3.36	1.373	.763	.892
64: How do you rate the way you felt treated by the receptionist?	3.34	1.273	.395	.931
Subscale 9: Privacy				
65: Thinking about your visits to this clinic: were you provided with information about confidentiality (privacy) while you were in the clinic?	1.41	.499	.012	.657

66: How sure are you that your concerns will be kept confidential (private) by the doctor/s of this clinic?	3.34	1.132	.547	.514
67: How sure are you that your concerns will be kept confidential (private) by the nurses of this clinic?	3.07	1.233	.570	.499
68: How sure are you that your concerns will be kept confidential (private) by the receptionists of this clinic?	3.24	1.261	.579	.493
69: Did the doctor/ nurse suggests he/she spends some time speaking to you on your own, without the presence of a parent, friend or other person?	2.05	.947	-.192	.737
70: You feel the registration at the reception is done in a way that no one else could overhear what you are talking about.	2.78	.791	.346	.595
71: You feel the consultation is done in a way that no one else could see the examination or overhear what you are talking about.	2.93	.818	.556	.536
Subscale 10: No judgement				
Thinking about your last (most recent) consultations at this clinic.				
72: The doctor gave you his/ her full attention.	3.15	.786	.715	.909
73: The doctor respected your opinion and decision even if they were different from his/ hers.	3.00	.878	.671	.913
74: The doctor treated you in a supportive and caring manner.	3.15	.822	.624	.916

Table 1 *Continued*				
Items	*Mean*	*SD*	*Corrected item-total correlation*	*Cronbach's α if item deleted*
75: The doctor seemed interested in what you had to say.	3.10	.777	.765	.906
76: The nurse gave you his/ her full attention.	3.06	.860	.766	.905
77: The nurse respected your opinion and decision even if they were different from his/ hers.	2.89	.871	.733	.908
78: The nurse treated you in a supportive and caring manner.	2.97	.861	.793	.903
79: The nurse seemed interested in what you had to say.	2.87	.877	.777	.904
Subscale 11: Quality				
Thinking about your last consultations in this clinic				
93: You received the treatment or service that met your expectations.	2.91	.759	.595	.859
94: The doctor/ nurse explained things in a way you could understand.	3.18	.663	.710	.851
95: The doctor/ nurse explained to you what tests she/ he was doing when examining you.	3.09	.830	.561	.862
96: The doctor/ nurse explained to you the results of the tests or check-ups she/ he has done.	3.11	.785	.632	.856

97: The doctor/ nurse explained to you the treatment she/ he gave and why she/ he gave it.	3.10	.750	.703	.850
98: The doctor/ nurse discussed with you the advantages and disadvantages of the treatment she/ he gave.	2.84	.873	.638	.855
99: The doctor/ nurse asked you what treatment you preferred.	2.39	.991	.381	.883
100: You understood the tests and/or treatments the doctor/ nurse gave.	3.12	.791	.723	.847
101: You had enough time to ask the doctor/ nurse everything you wanted to ask.	3.02	.861	.636	.855
Individual items:				
24: Did you ever postpone getting help for a health problem at this clinic because the clinic's working hours were not suitable?				
89: The waiting area and surroundings of the clinic were appealing/ satisfying.				
90: Did you notice any educational material about adolescent health in this clinic?				
91: How would you rate the quality of the information provided in these materials?				
92: Would you like to make a suggestion for improving the services to young people in this clinic?				

SD, standard deviation

Table 2 Cronbach alpha values before and after removal of items from the adapted YFHS-WHO+ questionnaire

Subscale	*Cronbach's α before removal of items*	*Cronbach's α after removal of items*
1	0.902 (n=14)	0.863 (n=10)
2	0.775 (n=9)	-
3	0.825 (n=5)	0.638 (n=2)
4	0.835 (n=6)	0.835 (n=6)
5	0.842 (n=6)	-
6	0.963 (n=16)	0.935 (n=9)
7	0.682 (n=3)	0.725 (n=2)
8	0.910 (n=7)	0.874 (n=5)
9	0.630 (n=7)	0.795 (n=5)
10	0.919 (n=8)	0.884 (n=6)
11	0.872 (n=9)	0.749 (n=5)

n, number of items in the subscale

Table 3 Ranking ofthe expert scores and youth scores of each clinic

Clinic	*Rank: expert score*	*Expert score (%)*	*Rank: youth score*	*Youth score (%)*
Clinic D	1	91.99	2	70.61
Clinic C	2	91.79	1	74.40

Clinic B	3	76.59	4	59.67
Clinic A	4	76.10	3	68.72