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*Research Article*

# Knowledge and Attitude about Reproductive Health and Family Planning among Young Adults in Yemen

**Muhammed S. A. Masood[1] and Nabila A. A. Alsonini[2]**

[1]*Mathematics Department, Faculty of Education and Language, Amran University, Amran, Yemen*
[2]*Geographic Department, Faculty of Education and Language, Amran University, Amran, Yemen*

Correspondence should be addressed to Muhammed S. A. Masood; drmohammedabalan@gmail.com

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*Background.* The Yemeni government is focusing more attention on the needs of youth to ensure a healthy transition to adulthood. This is critical because adolescent population (ages 15–24) of 3.35 million will double in just 20 years. Young adults often lack basic knowledge about reproductive health and family planning. *Objectives.* To determine reproductive health and family planning knowledge and attitude among young adults aged 15 to 25+ years. *Method.* Sample study was taken from Marie Stopes International in Yemen which was conducted from March to July 2013 on the reproductive health age 15–49 years. Descriptive, bivariate, and multivariate analyses were employed. *Results.* Majority had heard about reproductive health and family planning and encouraged its methods. Television, relatives, and radio were major sources of information. Adults with higher education tend to have more awareness about health services. Knowledge about health services and family planning methods among older adults was significant, and adults in Belqees Club were more likely to have high empowerment scores for family planning methods. *Conclusion.* The level of knowledge about health services for reproductive health and family planning and its methods was low to moderate. The introduction of contraceptives remains a challenge in Yemen because the educational reproductive health is weak in Yemeni schools or health institutes or universities. Information about reproductive health and family planning should be provided to adolescents through medical schools curricula.

## 1. Introduction

Family planning (FP) is critical for health of women and their families, and it can accelerate a country's progress toward reducing poverty and achieving development goals. Because of its importance, universal access to reproductive health (RH) services, including FP, is identified as one of the targets of the United Nations Millennium Development Goals (MDGs) [1]. Moreover, other international agreements, including the Programme of Action of the 1994 International Conference on Population and Development, promote individuals' freedom to decide the number and timing of their children as a basic human right and reproductive right [2].

Yemen is one of the most underdeveloped countries in the world and the least developed country within the Middle East. This was reflected in the poor socioeconomic and demographic indicators for the country [3]. Yemen's population reached 21.6 million in mid-2006 and although the population growth rate has decreased from 3.7% to 3.5% over the last decade, it is still one of the highest in the world [3]. Yemen's large share of youth population (44% of the country population is younger than 15 years old) [4] and therefore yet to enter reproductive age) means that the growth in total population is likely to continue, with critical implications for economic, social, and environmental policy and planning. There has been improvement in the demographic indicators, with fertility showing a decrease from 6.2 births per woman as reported by the Yemeni Family Health Survey (YFHS) 2003 [5] into 4.4 in Yemeni National Health Demographic Survey (YNHDS) 2013 [6]. The YFHS 2003 reported that 23% of married women aged 15–49 have ever used FP method, which increased into 34% in YNHDS 2013 [6].

The Yemeni Demographic Maternal and Child Health Survey (YDMCHS) 1997 reported that the unmet need for FP is still high among adolescent and young women, 36.7% for women ages 15–19, and 36% for ages 20–24 [7]. As a result, the Yemeni Multiple Indicators Cluster Survey (YMICS) 2006 reported the adolescent fertility rates are 74 births per 1,000 women aged 15–19, and 211 births per 1,000 women among 20–24 years, and 247 among women aged 25–29 years [8], which declined into 67, 191, and 208 births per 1,000 women, respectively, in YNHDS 2013 [6].

The YFHS 2003 reported that 9.7%, 21%, and 28% of women aged 15–19, 20–24, and 25–29 years had ever used modern methods, respectively [5], that increased into 12.1%, 23%, and 33%, respectively, in YNHDS 2013 [6].

Few young women receive messages about FP through the media. In the YDMCHS 1997, 30% of Yemenis young women aged 15–19, 34.2% of group of 20–24, and 33.2% of group of 25–29 had received FP messages through television and/or radio [7]. Furthermore, 5.2% of young women aged 15–19, 4.9% of women aged 20–24, and 4.9% of women aged 25–29 said they received print messages on FP (from newspapers/magazines, posters, or leaflets/brochures) [7].

It is difficult for adolescents, particularly those who are unmarried and not in school, to obtain reproductive health information and services [9]. There is a strong relationship between educational levels of women and the fertility rate, with 5.8 births for illiterate women compared to 4.7 for women who have completed basic education [8].

Focusing on adolescent and adult RH shows challenges and an opportunity for healthcare providers. Generally, the adolescence is a healthy period of life; many adolescents are less informed, less experienced, and less comfortable accessing health services (HS) for RH than adults [10, 11]. Moreover, adolescents often lack basic RH information, knowledge, and access to affordable confidential HS for RH.

In view of this, the main targets of current study are to

(i) determine RH and FP knowledge and attitude among adolescents and adults of age between 15 and 25+ years residing in Sana'a City, capital of Yemen;

(ii) assess the differences in knowledge and attitudes of RH and FP issues in groups of the study (sex, age groups, level of education, and area site);

(iii) assess to what extent the youth are aware of RH and FP information;

(iv) suggest measures to improve awareness among various population segments in the reproductive age group regarding FP and RH contraception.

## 2. Methods

Marie Stopes Organization International (MSOI) is a global leader in contraception and in prevention of HIV. MSOI-Yemen has been providing RH services since 1998. A questionnaire was designed by the MSOI to collect the required data as sociodemographics and knowledge, attitude, and practice about RH, FP, contraception methods, and HIV/AIDS issues using. The survey conducted in three governorates, namely, Sana'a the capital, Taiz, and Ibb. It was carried out from March to June 2013. The total sample was 1000 males and females aged 15–49 years. Data was collected and computerized for future uses. The target of the present study is to assess the knowledge about HS for RH and FP, methods for FP and attitudes to FP among participants of the sample study on the reproductive age group 15–49 years. So the sections including the FP use, knowledge about RH and FP, and sources of information were selected. The participants from Ibb and Taiz governorates were only males and excluded from this study. Therefore, the respondents of this study were students who studied in the Secondary Khola School, Sana'a University, and the memberships who belonged to the Sport Belqees Club in Sana'a City, capital of Yemen, and the sample study was 781 individuals aged 15–24 and 25+ years.

### 2.1. Definition of Terms

*2.1.1. Knowledge about HS for RH and FP Index.* The participants were asked 8 questions which covered the main HS provided for RH and FP in Sana'a City, Yemen, namely, Government Hospital, Government Health Center, Marie Stopes Clinics (organization), NGO's (nongovernmental organization) Clinics, Private Hospital, Private Doctor, Private Clinic, and Pharmacy/Drugstore. The multiple-choice questions for knowledge about HS for RH were recorded by assigning score of 1 for "health service known" "yes" response and 0 for "no." The 8 answers were summed to determine the knowledge about health services (KHS) for RH index. The summary index ranges from 0 to 8.

*2.1.2. Knowledge about Contraceptive Methods for FP Index.* The available methods for FP which were assessed in the study are IUD (intrauterine device), Pills, Female Sterilization, Male Sterilization, Rhythm Method, Withdrawal, Implants, Condom, and Injection, each method assigned 1 for "know" and 0 for "no"; then it summed to determine the knowledge of contraceptive method for FP index. The summary index again ranges from 0 to 9.

*2.1.3. Knowledge of Meaning of RH or FP Indices.* It consisted of 4 points and each point was assessed by 1 for "yes" and 0 for "no." The summary index again ranges from 0 to 4.

*2.1.4. Sources of Information about RH and FP Index.* The participants were also asked about the sources of information about RH and FP. The availability sources of information are 8 sources, namely, radio, television, newspapers, brochures, symposiums, relatives, neighbors, and peer to peer education. For each source, it is assigned 1 for "know" and 0 for "no"; then it summed to determine the sources of information for RH index. The summary index ranges from 0 to 8.

*2.1.5. Attitudes towards FP Index.* Participants were asked only one question, Do you encourage using the FP methods?

## 3. Data Analysis

Knowledge about HS for RH and FP, contraceptive methods for FP, meaning of RH or FP, and sources of information indices were considered quantitative variables; sociodemographic variables such as sex, marital status, age groups, educational levels, and research site were considered as qualitative or categorical variables. So frequencies and proportions were calculated for categorical variables and descriptive statistics were calculated for quantitative variables. To compare the means of quantitative variables in the 2 groups, $t$-test was used, while to compare the means of quantitative variables between 3 groups or more, the analysis of variance (ANVOA) was carried out. In addition, if the results of ANOVA are significant, Tukey method was used to examine the means differences for multiple comparisons between groups [12]. Data analysis was conducted by using the statistical computing package SPSS 18.

## 4. Results

This study included one girls school, new students from selected colleges in Sana'a University (4 colleges), and Belqees Club Sport of women in Sana'a in the reproductive age groups 15–24 and 25+. From the sample, 781 were interviewed. Sociodemographics of study participants were shown in Table 1. Sixty-nine percent of the sample was females. Sana'a University (65%) constituted the major group, while quarter was Khola School.

Most (86%) of respondents were not married, more than half of respondents (58%) had ages between 20 and 24 years, while 27% had ages between 15 and 19 years, and 15% of the sample were over age of 25. This shows that the majority of the respondents are 24 years old and below. Approximately 66% of sample had secondary school and fewer cases had university education (7.4%).

The rates of knowledge about HS for RH and FP, methods for contraceptives, and sources of information for RH and FP were summarized in Table 2. Most of participants had heard and known RH and FP (95.6%). The major source information for RH and FP was television in 80.5% of the cases, followed by relatives (33%), radio (32.7%), and newspapers (25.4%).

At the time of the study, 96.7% of respondents were encouraged for FP: 78.1% acquainted oral pills, 61.1% UIDs, 49.6% injections, 41.2% rhythm methods, and 37.4% condoms, and 35.2% of sample heard about implants (Table 2). In addition, the majority of the respondents knew the types of HS for RH and FP (85%). Nearly 86% of the sample knew that they could get methods of FP from Government Health Center and Hospital followed by Private Clinic and Hospital (60.3%). About 30% could get methods of FP from NGO's and Marie Stopes Clinics.

Table 3 presents the mean scores for knowledge about type of HS for RH and FP, methods for contraceptives of FP, meaning of RH, and meaning of FP by sources of information index.

Among all participants, the mean score on the 8-point index of the knowledge about HS for RH and FP is 2.20, indicating very weak awareness of the HS providers, where less than 45% of sample could get services from one or two HS providers (Table 2). Knowledge of methods for contraceptive index is also low. Of the 9 types of methods used for FP, participants' acquaintance is, on average, 3.52. Mean scores are moderate, 2.05, for the 4 points of meaning of RH and low for the 4 points of meaning of FP (1.59) (Table 3).

Bivariate analyses identified the factors associated with knowledge about HS for RH and FP, type of methods contraceptive for FP, meaning of RH, and meaning of FP by sources of information for RH and FP indices. The mean scores index showed statistically significant differences for each source of information with knowledge about HS for RH and FP and type of methods of contraception for FP indices.

Means of communication such radio, television, newspapers, brochures, and symposiums had only statistically significant differences with indices for meaning of RH and meaning of FP (Table 3).

Table 4 shows that the mean scores index for knowledge about HS for RH and FP and sources of information of RH and FP was significantly associated with participants' sex ($P < 0.05$); it reveals that males had more awareness than females. Marital status was positively associated with knowledge of type of FP and sources of information indices, wherever married had higher mean scores than never married ($P < 0.01$) (Table 4). In addition, males and married had more knowledge of sources of information about RH and FP.

The results of analysis of variance (ANOVA) to compare the means of indices for knowledge about HS for RH and FP, type of contraceptive methods, meaning of RH, meaning of FP, and sources of information with education levels, age groups, and area sites of individuals were presented in Table 5.

There are highly significant differences between the mean scores for all five indices due to age groups, levels of education, and area sites of participants in Sana'a City, Yemen ($P < 0.001$). It should be observed that education level was positively associated with all five indices, where participants who had university education had higher means than those who had secondary or basic level. Also, participants who had secondary level had more awareness to all indices than those who had basic level, since they had higher means scores.

Individuals in Belqees Club had more awareness to know the type of methods for FP and meaning of RH and FP than students of Sana'a University or in Khola School; however, the students of Sana'a University had more knowledge about HS of RH and FP and sources of information than those in Belqees Club or in Khola School.

As expected, older participants had more awareness with all indices, where they had higher means scores for all indices.

To know the trend of differences between means of categories, Tukey procedure used for the multiple comparisons between mean categories of variables for each index. The results of Tukey procedure are presented in Table 6 that explained the following.

*4.1. Educational Level.* The acquaintance among participants who had university education was more statistically significant for all indices than those who had basic education.

Table 1: Sociodemographic characteristics of participants, Sana'a City, capital of Yemen.

| Variables | Categories | Frequency | Percent |
|---|---|---|---|
| Marital status | Single | 671 | 85.9 |
| | Married | 110 | 14.1 |
| Age groups (years) | 15–19 | 212 | 27.1 |
| | 20–24 | 454 | 58.1 |
| | 25+ | 115 | 14.8 |
| Area site | Khola School | 199 | 25.5 |
| | Sana'a University | 506 | 64.8 |
| | Belqees Club | 76 | 9.7 |
| Education levels | Basic | 209 | 26.8 |
| | Secondary school | 514 | 65.8 |
| | University | 58 | 7.4 |
| Sex | Male | 239 | 30.6 |
| | Female | 542 | 69.4 |

Participants who had university education had more knowledge about methods of FP and sources of information than those who had secondary school education. Participants with secondary education were likely to have more knowledge about HS for RH and FP, methods of FP, meaning of FP, and sources of information than those who had basic education ($P < 0.001$).

*4.2. Age Groups.* Participants who were aged 25+ had more awareness for all indices than the younger. Moreover, the awareness among 20–24 year olds for knowledge about HS for RH and FP, methods for FP, meaning of FP, and sources of information indices was more than the younger.

*4.3. Area Site.* An expected finding is that students in Khola School had less awareness about HS for RH and FP or methods of FP or meaning of RH or FP or sources of information index than those in Sana'a University ($P < 0.001$). Participants in Belqees Club had more acquaintance about methods of FP, meaning of FP, and sources of information than those in Khola School. Moreover, participants in Belqees Club were likely to have more awareness about methods of FP than those in Sana'a University ($P < 0.01$).

## 5. Discussion

The mean score of knowledge about HS for RH and FP is very low (2.20 out of a maximum of 8). This finding agreed with the study in Tehran (Iran) [13], whereas, in Ethiopia, it was moderate [14]. Also, knowledge of sources of information about RH and FP is very low (2.40 out of 8) as compared with study carried out in Ethiopia [14], where it was moderate. On the other hand, in current study, it was found that knowledge of meaning of RH is moderate. The study agreed with a study conducted in Yemen [15] that reported more than three-quarters recognized contraception methods were pills. 85% of respondents could get HS for RH and FP from Government Hospitals and Health Centers and 80% hear about HS for RH and FP through television. A similar finding was found in the study conducted in Ethiopia [14]. On the other hand, only 10% could get HS for RH and FP from Marie Stopes Clinics, which was very low as compared with that Ethiopian study that could get from Red Cross society [14].

The study agreed with a study done in Bangalore [16], which reported that about 97% of Yemeni participants had agreed for contraception and it is high as compared to the finding that was found in a study in Nigeria [17].

The mean score for knowledge about HS for RH and FP and methods of FP indices showed statistically significant differences for sources of information index such as radio and television, which were supported by Ethiopian study [14].

*5.1. Sex and Marital Status.* Generally, females cooperated more often than males in scientific researches, the numbers of female respondents were higher than males, and about 14% of the sample were married. So the knowledge about HS for RH and FP among the sample study was low (2.20), although males had more awareness about HS for RH and FP than females and the difference was significant ($P < 0.05$). Also, married persons had more awareness about FP more than singles and the difference was significant. The opposite was found in Ethiopian study [14]. Likewise for knowledge about sources of information, males had higher mean than females and the difference was significant, which was supported by a study conducted in Ethiopia [14].

*5.2. Level of Education.* Educational level of the participants has been identified with a highly significant relationship to the knowledge about HS for RH and FP, methods of FP, meaning of RH and FP, and sources of information indices (Tables 5 and 6). This indicates that the better knowledge about HS for RH and FP, methods of FP, and sources of information were more among participants with secondary or university education than those who had basic education, and the differences were highly significant which was supported by a study conducted in Ethiopia [14]. This finding does not agree

Table 2: Knowledge about HS for RH and FP, methods used for FP, and sources of information for RH and FP.

| Knowledge about HS for RH and FP | | | Knowledge of methods for FP | | | Source of information for RH and FP | | |
|---|---|---|---|---|---|---|---|---|
| Variables | Number | % | Variables | Number | % | Variables | Number | % |
| Know a place to get FP | 664 | 85.0 | Encourage using FP | 755 | 96.7 | Heard of RH and FP | 747 | 95.6 |
| Government Hospital | 322 | 41.2 | IUD | 477 | 61.1 | Radio | 255 | 32.7 |
| | | | Pills | 610 | 78.1 | | | |
| Government Health Center | 346 | 44.3 | Female sterilization | 134 | 17.2 | Television | 629 | 80.5 |
| Marie Stopes Clinics | 78 | 10.0 | Male sterilization | 127 | 16.3 | Newspapers | 198 | 25.4 |
| NGO's Clinics | 152 | 19.5 | Rhythm method | 322 | 41.2 | Brochures | 179 | 22.9 |
| Private Hospital | 234 | 30.0 | Withdrawal | 122 | 15.6 | Symposiums | 144 | 18.4 |
| Private Doctor | 212 | 27.1 | Implants | 275 | 35.2 | Relatives | 258 | 33.0 |
| Private Clinic | 237 | 30.3 | Condom | 292 | 37.4 | Neighbors | 119 | 15.2 |
| Pharmacy/Drugstore | 140 | 17.9 | Injection | 387 | 49.6 | Peer to peer education | 89 | 11.4 |

Table 3: Mean sources of knowledge about HS for RH and FP, methods of FP, meaning of RH, and meaning of FP, by sources of information ($t$-test).

| Variables | Categories | Knowledge about HS for RH and FP | Knowledge of methods of FP | Meaning of RH | Meaning of FP |
|---|---|---|---|---|---|
| Radio | No | 1.98 | 3.32 | 1.91 | 1.46 |
| | Yes | 2.66*** | 3.91*** | 2.34*** | 1.87*** |
| TV | No | 1.69 | 2.94 | 1.78 | 1.29 |
| | Yes | 2.33*** | 3.66** | 2.12** | 1.67*** |
| Newspapers | No | 2.05 | 3.33 | 1.98 | 1.53 |
| | Yes | 2.67*** | 4.07*** | 2.26** | 1.79** |
| Brochures | No | 2.03 | 3.31 | 1.97 | 1.48 |
| | Yes | 2.80*** | 4.21*** | 2.34** | 1.98*** |
| Symposiums | No | 2.11 | 3.40 | 1.99 | 1.50 |
| | Yes | 2.60** | 4.02** | 2.32** | 1.99*** |
| Relative | No | 2.01 | 3.39 | 1.99 | 1.54 |
| | Yes | 2.59*** | 3.76* | 2.16 | 1.67* |
| Neighbors | No | 2.07 | 3.38 | 2.02 | 1.55 |
| | Yes | 2.94*** | 4.26*** | 2.19 | 1.83** |
| Peer to peer education | No | 2.09 | 3.42 | 2.07 | 1.58 |
| | Yes | 3.07*** | 4.22** | 1.91 | 1.70 |
| Overall scores | | 2.20 | 3.52 | 2.05 | 1.59 |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

Table 4: Mean sources of knowledge about HS for RH and FP, methods of FP, meaning of RH, meaning of FP, and sources of information by sex and marital status ($t$-test).

| Variables | Categories | Knowledge about HS for RH and FP | Knowledge of methods of FP | Meaning of RH | Meaning of FP | Sources of Inf. |
|---|---|---|---|---|---|---|
| Gender | Male | 2.39 | 3.58 | 2.12 | 1.66 | 2.64 |
| | Female | 2.12* | 3.49 | 2.02 | 1.56 | 2.29* |
| Marital status | Single | 2.17 | 3.40 | 2.02 | 1.58 | 2.34 |
| | Married | 2.40 | 4.22** | 2.21 | 1.65 | 2.76* |

Inf.: Information; *$P < 0.05$, **$P < 0.01$.

with a study that was done in Hospital and Al-Olofi Center in Sana'a [18]. Therefore, participants with higher levels of education appear to know and encourage contraception methods more than those with basic education, and this is especially as the case in the study that was done in Egypt [19].

*5.3. Age Groups.* More than half of the sample was aged 20–24 followed by the younger (27%). The expected finding is that knowledge about contraceptive methods among older people and adults was more than the younger (15–19) and the differences were highly significant, which was supported by another study in Yemen [20]. Likewise, for knowledge about HS for RH and FP index, older people and adults had more statistical awareness compared to the younger ($P < 0.01$). This agreed with the finding that revealed that the women aged 20–24 knew of a source for method of contraception compared to the Yemeni youngest women aged 15–19 [20]. Therefore, old participants had statistically more awareness for meaning of RH or FP or sources of information of RH and FP index than the youngest. This is because old participants maybe had more experience than the young one had and had more education.

*5.4. Area Site.* Adolescents in Khola School generally appear to be less empowered to methods of FP than those adults in Sana'a University or in Belqees Club, and the differences were statistically significant. In addition, older adults in Belqees Club were more likely to have high empowerment scores for methods of FP than the younger in Khola School or adults in Sana'a University. Furthermore, women in Belqees Club or adults in Sana'a University were more likely to be aware of meaning of FP and sources of information about RH and FP than adolescents in Khola School. Also, adults in Sana'a University were more likely to acquaint with HS for RH and FP and meaning of RH than adolescents in Khola School. These figures may be due to some reasons:

(i) About 42% of adults in Belqees Club and 14% in Sana'a University were married as compared to 3% in Khola School

(ii) About 43% of Belqees Club had university education compared with 5% in Sana'a University

(iii) Nearly 38% of Belqees Club had secondary education compared 2% in Khola School

Table 5: Mean sources of knowledge about HS for RH and FP, methods of FP, meaning of RH, meaning of FP, and sources of information by some selected characteristics (ANOVA).

| Variables | Categories | Knowledge about HS for RH and FP | Knowledge of methods of FP | Meaning of RH | Meaning of FP | Sources Inf. |
|---|---|---|---|---|---|---|
| Area site | Khola School | 1.77*** | 2.82*** | 1.82* | 1.34*** | 1.77*** |
| | Sana'a Uni. | 2.38 | 3.64 | 2.12 | 1.67 | 2.64 |
| | Belqees Club | 2.14 | 4.51 | 2.14 | 1.76 | 2.41 |
| Age groups (years) | 15–19 | 1.86 | 2.88 | 1.83 | 1.35 | 1.84 |
| | 20–24 | 2.33 | 3.60 | 2.07 | 1.65 | 2.48 |
| | 25+ | 2.34** | 4.35*** | 2.37** | 1.84*** | 3.10*** |
| Education level | Basic | 1.73 | 2.86 | 1.86 | 1.33 | 1.75 |
| | Secondary | 2.35 | 3.67 | 2.09 | 1.67 | 2.57 |
| | University | 2.62*** | 4.52*** | 2.36** | 1.85*** | 3.21*** |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

Table 6: Results for multiple comparisons of mean differences between categories by Tukey procedure.

| Area site | MD | Age intervals | MD | Education level | MD |
|---|---|---|---|---|---|
| | | *Knowledge about HS for RH and FP index* | | | |
| Khola School, Sana'a Uni.*** | −0.61 | (15–19), (20–24)** | −0.47 | Basic, secondary*** | −0.62 |
| | | (15–19), (25+)* | −0.48 | Basic, university** | −0.89 |
| | | *Knowledge of methods of FP index* | | | |
| Khola School, Sana'a Uni.*** | −0.82 | (15–19), (20–24)** | −0.73 | Basic, secondary*** | −0.81 |
| Khola School, Belqees Club*** | −1.69 | (15–19), (25+)*** | −1.49 | Basic, university*** | −1.66 |
| Sana'a Uni., Belqees Club** | −.87 | (20–24), (25+)** | −0.74 | Secondary, university* | −0.85 |
| | | *Meaning of RH index* | | | |
| Khola School, Sana'a Uni.* | −0.30 | (15–19), (25+)** | −0.54 | Basic, university* | −0.51 |
| | | *Meaning of FP index* | | | |
| Khola School, Sana'a Uni.*** | −0.33 | (15–19), (20–24)** | −0.30 | Basic, secondary*** | −0.34 |
| Khola School, Belqees Club** | −0.42 | (15–19), (25+)*** | −0.49 | Basic, university** | −0.51 |
| | | *Sources information index* | | | |
| Khola School, Sana'a Uni.*** | −0.87 | (15–19), (20–24)*** | −0.64 | Basic, secondary*** | −0.82 |
| Khola School, Belqees Club* | −0.64 | (15–19), (25+)*** | −1.25 | Basic, university*** | −1.46 |
| | | (20–24), (25+)** | −0.62 | Secondary, university* | −0.64 |

MD: mean differences; *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

(iv) Most of Belqees Club (66%) were aged 25 and above compared with 13% of Sana'a University

(v) Belqees Club provides health programs about maternal and child health

In conclusion, this study has indicated that the level of knowledge about HS for RH and FP, method of FP, meaning of RH and FP, and source of information for RH and FP is low to moderate. Moreover, adults had more favorable attitude towards awareness of HS for RH and FP and method of FP issues than adolescents. The improvement of educational level tends to be positively associated with each index of knowledge of RH and FP. Moreover, participants in Belqees Club had more awareness for all indices than those in Sana'a University or Khola School.

The introduction of contraceptives method remains a challenge in Yemen due to the dominant traditional knowledge and religious belief that having more children gives more power [21].

The adolescents in Alexandria (Egypt) [22] or in Kwadaso (Ghana) [23] believe they know too little about RH, want to know more, and welcome RH education that is part of school curricula.

The adolescent or adult RH is an increasingly important component of global health. Therefore, adolescents and adults need access to more information, through various sources, on RH, and they need access to services before they marry and have their first child. Moreover, school-based RH education can be effective and significantly improve girls' RH knowledge and attitudes important for protecting their health and wellbeing as they grow older, take on responsibilities as adults, and form families of their own [22].

The advantages of current study are as follows: all participants were studying in secondary school or in university or had university education and above. All participants belong to different age groups, schools, or university or belong to club sport.

In general, there are many reasons for weak awareness among adolescents and adults about RH and FP issues that were summarized as follows [20]:

(i) Lack of responsiveness of curricula through educational programs and activities on the needs of young people in the areas of life skills, reproductive health, and family life

(ii) Weakness of radio and TV programs targeting adolescents and youth and the use of inappropriate broadcasting times

(iii) Weakness of content of RH information in the school curricula and insufficient training of teachers in this field

(iv) Illiterate women (15–19) were more likely than those with schooling (particularly secondary school) to start childbearing early (20.4% compared with 12.2%)

Finally, RH and FP education should be strengthened through the following:

(i) Provide good quality services to young married couples

(ii) Promote awareness and sensitize young people, community leaders, and parents about the importance of RH and FP

(iii) Information about RH and FP should be provided to adolescents through medical schools curricula, health institutes, universities, and clubs sport.

(iv) Ministries of Health and Youth must support RH and FP programming through communication means and the National Population Council and the Yemeni Family Care Association must provide activities in health education and FP services.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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