Determinants of Reproductive Health Knowledge in Adolescent School Going Girls, in Kilifi, Kenya

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Background

The onset of puberty and menarche is a particularly vulnerable time for girls, a time when they begin to show interest in the opposite sex and also become exposed to a myriad of external pressures, including sexual coercion or harassment from boys and men, and expectations to marry from their families (Sommer, 2011). According to several qualitative studies in Africa, such pressures are exacerbated by girls' lack of knowledge of their bodies and their rights (Mukuru 2008; Sommer 2009, 2010; Crofts and Fisher 2012; Mason *et al.*, 2013; Tegegne and Sisay 2014; Wilson, Reeve, and Pitt 2014). Studies from Kenya have shown that factors relating to girls having little or no knowledge of reproductive health (RH), such as menstruation, include traditional systems for passing on this knowledge from mother to daughter being no longer functional (McMahon et al. 2011; Mason et al. 2013); mothers having limited knowledge in this area, and also being affected by embarrassment, and cultural taboos (Crichton, Ibisomi, and Gyimah 2012). The aim of this study is to evaluate the levels of reproductive health knowledge and identify factors associated with reproductive health knowledge in school going adolescent girls in a rural setting in Kenya. The outcomes of this study will provide evidence on ways to improve girls' sexual and reproductive health knowledge, and in turn empower them to make informed decisions through their adolescent years and beyond.

Methodology

Study location: The study was carried out in Kilifi County, at the coast of Kenya. The county has a low transition rate from primary to secondary school, with approximately 22% of girls between the ages of 15 and 19 having begun childbearing, compared to the national average of 18% (KDHS, 2015).

Study Design: This study formed the baseline survey of a larger longitudinal, cluster-randomized controlled trial. Further details of the study design can be found in the Nia baseline report (Muthengi *et al.,* 2017). For the baseline survey, a cross-sectional survey was undertaken involving 140 public primary schools in three rural subcounties: Ganze, Kaloleni, and Magarini. Within the three subcounties, all schools with 25 or more girls in Class 7 were eligible for the study; schools with boarding facilities were excluded from the sample. A 1,000-meter buffer was created around each school, and in schools with overlapping boundaries, one school was randomly selected. In total 44 schools were included in Magarini, 50 in Kaloleni, and 46 in Ganze. In schools with 25 girls in Class 7, all girls were interviewed. In schools with a larger number of girls, 25 girls were randomly selected for interview, and 5 additional girls were selected as alternates. Data collection activities included of a structured questionnaire administered to each girl covering topics such as social and capital networks, marriage and sexual health and schooling. The survey was conducted between February and May, 2017.

Sample Size: Sample size calculations were based on the cluster randomized controlled trial, and calculated to determine the number of clusters (schools), and the number of girls needed in each cluster to observe the desired change in the mean days of school missed, according to differences detected in previous studies conducted in Kenya and Ghana (Montgomery *et al.,* 2012; Wilson *et al.,* 2012). This resulted in a sample size of 35 clusters per arm and 25 girls per cluster at baseline. Further details of the study design can be found in the Nia baseline report (Muthengi *et al.,* 2017).

Analysis: The quantitative outcome was a RH knowledge test score. The score was derived from 21 questions which focused on issues regarding fertility, marriage and sexually transmitted diseases. Each girl was given a score of 1 for every question they answered right. All questions were summed up, and each girl was given an overall score out of 21, with those scoring 21/21 being the most knowledgeable. Independent variables that were thought to have some potential influence on the girls' RH knowledge were selected from the structured questionnaires. A descriptive analyses was carried out on each variable. The measure of association between the independent variables and RH knowledge was conducted in two stages: first, a regression was carried for each independent variable, using random effects linear regression, defining the schools as clusters and including the stratified sub counties into the model. Variables were checked for missing data and potential multicollinearity, and were excluded accordingly, however no data was excluded for significant levels of missing data (>10%). Variables associated with the outcome in the analysis to a significant level of $p<0.20$ were then included into the final model. Analyses were carried out on STATA 14.2.

Results

Characteristics of the Adolescent Girls: A total of 3,489 adolescent girls were included in the study, equally distributed across the three sub counties. Their age ranged between 10 to 21 years, with around 70% falling between 13 to 15 years. Over 80% of girls described their religion as protestant, 13% Islam and the remainder included Catholic and traditional. Just over half of the respondents (56%) lived with both parents, one quarter lived only with their mother, 15% did not live with either parent, and a negligible percentage lived only with their father. Girls were asked questions regarding their social capital and networks and schooling. Around one third of respondents reported to be members of a club that focused on physical activities which consisted of sports or drama, 18% said they were members of a social club that taught life skills such as gender, human rights and HIV&AIDS and counselling or girl guides/ scouts. Just over 90% of girls reported that they has a good friend or female adult who was not their teacher or mother, who they could turn to for help or a serious problem. Slightly over half of girls said that in the past year either a teacher or someone external discussed topics of sexual health or sexually transmitted diseases (STIs) in their school, and around 10% reported to have talked about reproductive or sexual health issues either with their mother or female guardian in the past 6 months. A negligible percentage (1%) said that they had visited a health facility to access RH or STI services, in the past six months. Only 6 girls (>1%) reported to have ever been married and 35 girls (1%) reported to have ever lived with a boyfriend. Of 13% who had reported to have ever been sexually active, the majority reported having sex with either none or 1 partner in the past 6 months.

Univariate analyses: age was significantly associated to RH knowledge, with increasing age being positively associated with an increase in knowledge (Table 1). Amongst the 'social capital, networks and schooling' variables, girls who were members of a social skills group were significantly associated with higher RH knowledge scores (mean score (SD): yes, 51% (15); no, 50% (15), $p=0.020$), so were girls who were members of a physical skills group such as a sports or drama club (mean score (SD): yes, 51% (15); no, 50% (15), $p=0.012$), and girls who were members of a religious group (mean score (SD): yes, 51% (16); no, 50% (14), $p<0.001$). Girls who had a friend or a female adult, who was not a teacher or mother to turn to for help or advice were significantly more knowledgeable than those without that support (mean score (SD): yes, 51% (15); no, 47% (14), $p<0.001$); so were girls who had a teacher or external person teach them about sexual, RH or STI issues at school (mean score (SD): yes, 52% (15); no, 48% (14), $p<0.001$). Girls who had talked about sexual or RH issues with their mother or female guardian in the last six months were also significantly more knowledgeable that those who had not done so (mean score (SD): yes, 56% (15); no, 50% (15), $p<0.001$).There was weak statistical evidence to suggest that girls who had attended a health

facility in the past six months to access RH or STI services were less knowledgeable than those who had not accessed these services (mean score (SD): yes, 47% (12); no, 50% (15), p=0.052). Amongst variables linked to 'marriage and sexual behavior', there was evidence to suggest that girls who had ever lived with a boyfriend were significantly more knowledgeable than those who had never lived with a boyfriend (mean score (SD): yes, 55% (15.4); no, 50% (14.8), p=0.017) (Table 1).

Multivariate analyses: age remained significantly, and positively associated to reproductive health knowledge (Table 1). Other factors positively associated with RH knowledge were: if a girl was a member of a religious group (p=0.004); had been taught about sexual or RH in school within the past year (p<0.001); had a good friend or female adult she could turn to for help or discuss serious issues (p=0.004); had ever lived with a boyfriend (p=0.066), and had discussed sexual or RH issues with her mother or a female guardian in the last 6 months (p<0.001). Interestingly girls who had visited a health facility to access RH or STI services remained significantly, and negatively associated with RH knowledge (p=0.022) (Table 1).

Discussion: The study shows that the average RH knowledge test score was 50.3% (SD: 14.8). Amongst the variables related to socio-demographics, only age seemed to be correlated to RH knowledge, with older girls being more knowledgeable than younger girls. Several variables related to 'social capital, networks and schooling' were significantly associated with knowledge, in particular, being a member of a religious group; having a good friend or female adult who is not a teacher or mother to turn to for help or discuss serious problems, and having sexual and RH issues discussed in class, were all positively associated with increased RH knowledge. This shows the importance of encouraging girls to have a mentor they feel comfortable discussing life issues with, and also shows the importance of ensuring sexual and RH issues are taught in schools as part of the curriculum. Girls who had talked about sexual and RH issues with their mother or guardian over the past six months also had significantly more knowledge in RH than those who had not done so, further highlighting the importance of overcoming barriers that prevent women close to the girls, including their mothers to actively participate in sharing such information with the girls. Interestingly, girls who had accessed a health facility for a RH or STI issue within the past six months, were less knowledgeable in RH issues than those who did not access the facility. The majority of girls (35%) who reported going to a health facility, went there to access HIV testing services, the use of other services was low. More resources may be required to facilitate the use of HIV testing services as a platform to communicate issues of sexual and RH to adolescent girls using this service, either through the provision of leaflets, linking girls to relevant support groups or even ensuring that key information is communicated during the consultation process. Finally, RH knowledge was not associated with whether a girl was married, ever lived with boyfriend or even the number of partners they had over the past six months. It should be noted that the percentage of girls that fell into these categories was <10% and maybe some associations could have been seen with larger numbers.

Table 1: Determinants of Reproductive Health Knowledge (controlling for clustering within schools)

SOCIO-DEMOGRAPHIC FACTORS	RH knowledge mean test score % (SD)	β co-efficient (95% Confidence Interval)	P-value	β co-efficient (95% Confidence Interval)	P-value
Age (years):					
10 to 12	46.6 (16.5)	ref			
13	49.1 (15.0)	0.632 (0.163, 1.102)	0.008	0.571 (0.104, 1.037)	0.017
14	50.3 (14.6)	0.934 (0.477, 1.392)	0.000	0. 928 (0.471, 1.384)	0.000
15	51.2 (14.9)	1.160 (0.694, 1.626)	0.000	1.135 (0.667, 1.604)	0.000
16	52.2 (14.0)	1.388 (0.900, 1.876)	0.000	1.427 (0.934, 1.920)	0.000
17 to 20	50.6 (14.7)	1.090 (0.518, 1.662)	0.000	1.138 (0.556, 1.720)	0.000
Religion:					
Protestant	50.3 (14.9)	ref			
Islam	51.3 (14.6)	0.158 (-0.157, 0.474)	0.325	0.157 (-0.159, 0.473)	0.329

Other*	48.9 (14.4)	-0.303 (-.728, 0.122)	0.162	-0.287 (-0.711, 0.137)	0.184
Who does respondent live with:					
Mother Only	49.9 (14.5)	ref			
Father Only	52.9 (15.0)	0.564 (-0.031, 1.159)	0.063	0.400 (-0.274, 1.074)	0.245
Both Parents	50.6 (15.1)	0.187 (-.0516, 0.426)	0.125	0.181 (-0.053, 0.416)	0.130
Don't live with Parents	49.6 (14.3)	0.005 (-0.324, 0.333)	0.978	-0.059 (-0.401, 0.283)	0.736
Wealth quintile:					
Quintile 1 (most poor)	49.2 (14.2)	ref			
Quintile 2 (very poor)	51.2 (14.1)	0.294 (-0.026, 0.615)	0.072	0.356 (0.038, 0.673)	0.028
Quintile 3 (poor)	50.8 (14.9)	0.208 (-0.113, 0.529)	0.203	0.253 (-0.066, 0.572)	0.119
Quintile 4 (less poor)	50.7 (15.7)	0.253 (-0.071, 0.576)	0.126	0.372 (0.047, 0.697)	0.025
Quintile 5 (least poor)	50.1 (15.0)	0.005 (-0.332, 0.342)	0.976	0.177 (-0.165, 0.519)	0.311
Is your mother alive:					
yes	50.3 (14.83)	ref			
dead or don't know	52.87 (14.4)	0.547 (0.030, 1.063)	0.038	0.442 (-0.271, 1.155)	0.224
SOCIAL CAPITAL, NETWORKS & SCHOOLING	RH knowledge mean test score % (SD)	β co-efficient (95% Confidence Interval)	P-value	β co-efficient (95% Confidence Interval)	P-value
Member of a social skills group:					
no	50.2 (14.7)	ref			
yes	51.4 (15.1)	0.312 (0.048, 0.576)	0.020	0.229 (-0.041, 0.499)	0.097
Member of a physical skills group:					
no	50.0 (14.8)	ref			
yes	51.2 (14.9)	0.282 (0.061, 0.503)	0.012	0.099 (-0.130, 0.328)	0.398
Member of a religious group:					
no	49.9 (14.2)	ref			
yes	51.4 (16.0)	0.436 (0.213, 0.659)	0.000	0.340 (0.107, 0.572)	0.004
Has a good friend or female adult who is not a teacher or mother to turn to for help or discuss a serious problem:					
no	46.5 (13.9)	ref			
yes	50.7 (14.9)	0.752 (0.371, 1.134)	0.000	0.557 (0.176, 0.938)	0.004
In the past year, any teacher or someone else covered topics on sexual and RH or STIs:					
no	47.8 (13.6)	ref			
yes	52.1 (15.4)	0.895 (0.687, 1.102)	0.000	0.741 (0.531, 0.951)	0.000
Has talked about sexual or RH issues with her mother or female guardian in the last 6 month:					
no	49.6 (14.76)	ref			
yes	55.9 (15.1)	1.337 (1.021, 1.654)	0.000	1.104 (0.786, 1.422)	0.000
In the past six months, has accessed a health facility to get RH or STI services:					
no	50.4 (14.9)	ref			
yes	46.7 (11.5)	-0.966 (-1.943, 0.001)	0.052	-1.173 (-2.178, -0.169)	0.022
MARRIAGE AND SEXUAL BEHAVIOUR	RH knowledge mean test score % (SD)	β co-efficient (95% Confidence Interval)	P-value	β co-efficient (95% Confidence Interval)	P-value
Ever been married:					
no	50.4 (14.8)	ref			
yes	57.9 (18.9)	1.669 (-0.744, 4.083)	0.175	1.193 (-1.224, 3.610)	0.333
Ever lived with a boyfriend?					
no	50.3 (14.8)	ref			
yes	55.4 (15.4)	1.217 (0.213, 2.224)	0.017	0.995 (-0.064, 2.053)	0.066
Number of partners have you had in the last 6 months:					
Never had sex	50.5 (15.0)	ref			
None	49.4 (14.6)	-0.025 (-.746, 0.696)	0.946	-0.160 (-0.877, 0.556)	0.661
One	49.5 (13.9)	-0.012 (-0.388, 0.365)	0.952	-0.197 (-0.581, 0 .188)	0.316
Two	54.8 (14.6)	1.230 (0.193, 2.267)	0.020	0.720 (-0.337, 1.777)	0.182
3 or more	47.9 (11.8)	-0.391 (-1.383, 0.601)	0.440	-0.485 (-1.476, 0.507)	0.338
don't know	48.9 (11.3)	-0.567 (-1.805, 0 .671)	0.369	-0.784 (-2.032, 0.463)	0.218

Only displaying variables that with a p<0.2 in the univariate analyses; * Includes catholic or traditional religions