Using Anderson’s model of health service utilization to examine use of services by adolescent girls in south-eastern Nigeria*

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ABSTRACT
This cross-sectional study investigated the use of health services by adolescent girls using Anderson’s model of health utilization. Age was examined as a predisposing factor, parental support, parental communication and type of reproductive health facility was examined as enabling factors while emotional condition was examined as a need factor. We expected that that parental support and parental communication will influence adolescents’ use of reproductive health services. Results showed that age, emotional condition and type of reproductive health facility predicted the odds of adolescents using reproductive health services. Contrary to expectations, parental support and communication did not predict adolescents’ use of reproductive health services. Findings are discussed in relation to previous empirical studies on parenting and use of reproductive health services.

1. Introduction

Use of health services by is key to adolescent health and well-being. Adolescents make up a large and growing segment of many societies (Bankole & Malarcher, 2010). In Nigeria, for instance, people between 10 and 24 years account for over 46% of the population (National Population Commission, 2006). Empirical documentation shows that the use of reproductive health services by adolescents is low (Barrett, Byford, Chitsabesan, & Kenning, 2006; Belmonte, Gutierrez, Magnani, & Lipovsek, 2000; Schriver, Meagley, Norris, Geary, & Stein, 2014). The following factors account for low use of reproductive services by adolescents; feeling that reproductive services are for adults or married people (World Health Organization [WHO], 2001), harsh culture against the use of reproductive services by adolescents, lack of privacy (WHO, 2001), factual misinformation or perceptual bias by adolescents that use reproductive health services is for promiscuous or infected people, (Belmonte et al., 2000). Long distance to the reproductive centres (Aninanya et al., 2015) and high cost of service (Singh, Rai, Alagarajan, & Singh, 2012).

Most adolescents prefer to receive reproductive health information from friends, printed materials and informal sources (Jejeebhoy, Shah, & Yount, 1999) than going to reproductive health centres. Adolescent friendly reproductive health centres provide sexuality information. They provide assistance to young people on management reproductive services such as contraceptives, family planning, voluntary HIV counselling and testing, antenatal and post natal care, treatment of sexually transmitted diseases, pre-abortion counselling and care. Failure to use health services expose adolescents to preventable
health conditions (Heflinger & Hinshaw, 2010) which could be managed with early detection. Early detection reduces disease burden, adolescent mortality rate, curbs the spread and transmission of Sexually Transmitted Infections, and (Bertozi et al., 2006; Powers et al., 2011). Use of services will help achieve the global health initiative goal of reducing first births due to girls under 18 and reducing 54 million unintended pregnancies.

This study is based on the Andersen and Newman Framework of Health Service Utilization (Andersen and Newman (1973). This framework was developed by Andersen (1968) to ascertain conditions that facilitate or impede utilization of services by individuals. The framework predicts that a series of factors predisposing, enabling and need factors influence the utilization of health services by people. According to the model, predisposing factors are demographics and social structures. Enabling factors facilitates individuals to use services for example, availability of resources such as income, access to free services, availability and access to the service. Need factors motivates service use. For example, physical conditions illness or disease conditions. The model is flexible and provides a robust analytical framework for discussion. The variables are testable and can be applied in different settings. Andersen’s Behavioural Model has been used in studies investigating the use of health services, health systems and health conditions, Babitsch, Gohl, and von Lengerke (2012). Diehr and Evashwick (1984) used the model to examine utilization among elderly people, their result showed that need factors were important predictors of use of physician services, hospitalizations, ambulatory care and home care while predisposing factors were better predictors of the use of dental services. The study by Weller, Minkovitz, and Anderson (2003) showed that enabling factors influenced use of services, especially among participants with public insurance. The study of Rivara et al. (2007) showed that need factors measured by experience of Intimate partner violence influenced the use of health services.

In the present study, age of the participants was examined as predisposing factor. Enabling factors are parental support and communication, type of reproductive health facility. Need factors are feelings of inadequacy (not being good at all) and positive attitude about self. The purpose of the study was to examine how predisposing, enabling and need factors influence the use of reproductive health services by a random sample of adolescent girls and the interrelationships of these variables.

2. Methods

2.1. Participants

The sample consisted of 3065 adolescent girls recruited from 33 secondary schools in southeast, Nigeria. Multistage sampling was used to ensure a representative sample. The mean age of participants was 14.77 (SD = 4.5).

Ethical approval for the study was obtained from the University of Ibadan/University College Hospital (UI/UCH) Ethical Committee. Permission was sought from the heads of sampled schools. Written Informed consent was obtained from parents or guardian of respondents.

2.2. Sampling procedure

The sample was drawn from 33 government secondary schools in three states. The states were randomly selected from five states in the region. The selected states were further stratified according to senatorial zones and local government areas. Afterwards, the schools were stratified according to type (co-educational and all girls). Sample size for the study was determined using a standardized statistical table for sample size requirements for testing the value of a single proportion at the 5% significant level and 95% power (Woodward, 2005, p. 743). The table value is 3 001. To take care of attrition and non-response, 2% was added to the table value bringing the total sample size to 3060. All respondents gave their assent to participate in the study.
2.3. Measures

The questionnaires used for the study are: parent–child relationship scale, reproductive health utilization scale and Rosenberg Self-Esteem (RSE) Scale.

The questionnaires were pretested and self administered. Parent–child relationship scale was adapted from Adolescent Family Process Measure by (Vazsonyi, Hibbert, & Snider, 2003). Subscales measuring Support and Communication were adopted for the present study. The reliability coefficient of the subscales is .83 and .90 Cronbach alpha.

The sexual reproductive health utilization scale is a structured tool that draws information on demographics, awareness and prevalence of sexual and reproductive health service use. The questionnaire was adapted to the cultural context and revalidated. The scale has a reliability coefficient of .81 Cronbach alpha.

Rosenberg Self-Esteem Scale measured positive attitude about self and feelings of inadequacy RSE Scale has 10 items in a Likert format with an internal consistency of .83 alpha coefficient. The scale items are answered on a four-point format from strongly agree to strongly disagree.

2.4. Analysis

The Statistical Package for the Social Sciences version 17.0, with alpha set at .05 was used to analyze the data. Frequency counts and percentages were used to describe the categorical variables. Pearson moment correlation and binary logistic regression analysis was used for inferential statistics. Participants that answered yes to the question on awareness of reproductive health centres were included in further analysis and others were excluded.

3. Results

3.1. Description of participants

Table 1 shows the descriptive information about age of participants, who they stay with, awareness and visit to the reproductive health centres. Three thousand six hundred and five female students participated in the study. Seventy-five per cent of the participants are within the age group from 15 to 18. Sixty-three per cent stay with both parents, 3% of the adolescents stay with guardians and 15%

| Table 1. Background characteristics. | Frequency | Percentage |
|------------------------------------|-----------|------------|
| **Age**                            |           |            |
| 12 or less                         | 102       | 8.7        |
| 13–15                              | 370       | 31.5       |
| 16–21                              | 702       | 59.8       |
| **Parental presence**              |           |            |
| Living with Father only            | 187       | 15.9       |
| Living with mother only            | 61        | 5.2        |
| Living with Both parents           | 746       | 63.5       |
| Living with guardians              | 37        | 3.2        |
| No response                        | 143       | 12.2       |
| **Awareness of reproductive health services** |       |            |
| Yes                                | 1174      | 38.3       |
| No                                 | 1322      | 43.1       |
| No response                        | 569       | 18.6       |
| **Type of health facility**        |           |            |
| No response                        | 504       | 42.9       |
| Government                         | 163       | 13.9       |
| Private health centre              | 491       | 41.8       |
| Others                             | 16        | 1.4        |
stay with their father alone, compared to 5% of adolescents living with their mothers only. This is a rare occurrence as most people stay with more with their mothers than fathers.

Forty-three percent of the adolescents are not aware of any reproductive health centre, 38% were aware of Reproductive health services. Further analysis was carried out with the 38% who were aware of health services.

Twenty-eight per cent of those who visited the reproductive health centre went to privately owned centres. There was no question on reasons for using any type of service. The assumption is that there is less waiting time and quality care in private centres and the cost of service in private centres are high compared to services rendered in government owned clinics.

Table 2 shows the correlation between the predictor variables and the outcome variables. The correlation was guided by Taylor’s (1990, p. 37) categorization. Correlation coefficient \( r \) values less or equal to .35 represent low or weak correlations, values between .36 and .67 represent modest or moderate correlation, values between .68 and 1.0 show strong or high correlations and .90 represents very high correlations. The correlation table shows a weak correlation between feelings of inadequacy, parental support, age and visit to the reproductive health centre. There was a strong correlation between communication with parents and type of reproductive health facility visited.

### 3.2. Factors influencing visit to the reproductive health centres

Table 1 showed that 38% of the participants were aware of the presence of any reproductive health centre. The Andersons model of health service utilization outlined that predisposing, enabling and need factors will influence service use. For analysis, age was examined as a predisposing factor. Parental support, parental communication and type of reproductive health facility were examined as enabling factors. Feelings of inadequacy (not being good at all) and positive attitude about self were examined as need factors. From Table 3, adolescent girls who felt that they are not good at all were 1.8 times less likely to visit reproductive health centres than their counterparts who do not when other variables are controlled \( \text{OR} = 1.8, 95\% \text{ CI}: 1.4, 2.4 \). Type of health centre increases the odds that adolescent girl will visit reproductive health centre twice, when other variables are controlled \( \text{OR} = 2.0, 95\% \text{ CI}: 1.7, 2.3 \). Age of the adolescent girl increases the odd that she will visit a reproductive health centre .8 times, when other variables are controlled \( \text{OR} = .8, 95\% \text{ CI}: .64, .95 \). Parental support, parental communication and positive attitude about self did not predict the odds of adolescent girls visit to reproductive health centre.

### 4. Discussion

This study examined influence of predisposing, enabling and need factors (outlined by Anderson model of health service utilization) on visit to reproductive health centres by adolescent girls.
Forty-three per cent of the participants are not aware of any reproductive health centre. Awareness predisposes visit to health centres by adolescents. A publication by World Health Organization (2007) reported that adolescents are affected by the availability and awareness of health centres. Distribution of handbills in schools with information on adolescent friendly centres and websites will increase awareness. Funding adolescent friendly centres, giving assistance to existing centres to have adolescent friendly sections will increase access to services. This will aid achievement of MDG5b of increasing access to reproductive services by adolescents.

Adolescents who responded to the question on type of reproductive health facility mentioned that they visited private health centres. Public health centres are usually crowded and young people are impatient to wait. The findings of (Flores, Abreu, Olivar, & Kastner, 1998; Oruche, Downs, Holloway, Draucker, & Aalsma, 2014; Schriver et al., 2014 & Tilson et al., 2004) revealed that waiting time influences adolescent visit to reproductive health centres. Youth friendly centres reduce overcrowding and long waiting times.

Correlation matrix showed an association between communication with parents and type of reproductive health centre visited by adolescent girls. Although association does not mean causality. We assume that adolescents may not have the finances to access quality services even if they are aware of it. Parental involvement will influence awareness and access to health A publication by Adolescent Health Services (AHS) (2010) revealed that when parents are involved in their adolescents' lives, they help them find quality health care and treatment.

Age of adolescents predicted the odds of visiting a reproductive health centre. A publication by WHO (2001) reports that age affects health seeking behaviour of adolescents. The findings of Reed, Katzs, Barry, and Haugh (1999) showed that demographic variables like age contributed to service utilization. Along similar lines, Munthali, Chimbiri, and Zulu (2004) revealed that older adolescents used more service than younger adolescents.

Type of health facility significantly predicted the odds of visit to the reproductive health centre. The studies of Hock-Long, Herceg-Baron, Cassidy, and Whittaker (2003) and Erulkar, Onoka, and Phiri (2005) reveal that adolescents are likely to visit reproductive health centres that are youth friendly that others that are not.

Feeling of inadequacy negatively influenced the odds of an adolescent visiting a reproductive health centre. The studies of Carter, Downs, Bascom, Dyer, and Weisman (2012) and McCall-Hosenfeld, Weisman, Camacho, Hillemeier, and Chuang (2012) reveal that low self esteem is associated with low utilization health services. This puts them at increased risk for health complications, Schwarz (2010).

5. Implications

Visit to reproductive health centre increases use of reproductive health services by adolescents. This increases early disease detection, reduced infection rates, reduction in unwanted pregnancies increase quality of life and well-being of adolescents.

Reducing unwanted pregnancies in adolescents is one of the goals of global health initiative.
Access to psychological therapies increases positive attitude towards self, reducing feelings of inadequacy. Most reproductive health centres are yet to incorporate psychological therapy sections.

Further research would benefit from longitudinal studies employing male and female adolescent participants. This gives a clear direction of the interaction between the independent and dependent variables and an opportunity for a robust comparison.

6. Conclusion

This study shows that parental communication is associated with use of reproductive health service by adolescents. When other variables are controlled, age, feelings of adequacy and type of clinic predicts the odds of visit to reproductive health centres by adolescent girls in south-east Nigeria.

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