International Journal of Africa Nursing Sciences 10 (2019) 87–91

Contents lists available at ScienceDirect

International Journal of Africa Nursing Sciences

journal homepage: www.elsevier.com/locate/ijans

Factors associated with adolescent pregnancy in the Sunyani Municipality of Ghana

Bernard Yeboah-Asiamah Asare[a,*], Diana Baafi[b], Bismark Dwumfour-Asare[c], Abdul-Razak Adam[d]

[a] Research Web Africa, P. O. Box 2591, Sunyani, Brong-Ahafo Region, Ghana
[b] Department of Basic and Applied Biology, School of Sciences, University of Energy and Natural Resources, Sunyani, Brong-Ahafo Region, Ghana
[c] Department of Environmental Health & Sanitation, Faculty of Science & Environment Education, University of Education, Winneba. Asante-Mampong Campus, Ghana
[d] Brong Ahafo Regional Health Directorate, Ghana Health Service, P. O. Box 145, Sunyani, Brong Ahafo Region, Ghana

ARTICLE INFO

Keywords:
Adolescent pregnancy
Case control
Sunyani
Ghana

ABSTRACT

Adolescent pregnancy is an important social and public health issue worldwide, and it is linked to several social and economic consequences. This study sought to investigate the factors associated with adolescent pregnancy in the Sunyani municipality of Ghana. This study was an unmatched case-control among adolescents aged 15–19 years. The cases were pregnant and parenting adolescents, and controls were non-pregnant adolescents with no birth experience. Data were collected from 245 participants (120 cases and 125 controls) through a structured questionnaire survey and analysed with STATA version 12 for risk factors of adolescent pregnancy using Pearson's chi-square test and logistic regression.

The average age of study participants was 16.9 ± 1.15 years. Place of residence, occupation and economic status were found to be associated with adolescent pregnancy. Multiple logistic regression revealed that adolescents from urban settings, Abesim zone (OR = 0.07, 95% CI 0.01–0.35), and New Dormaa zone (OR = 0.19, 95% CI 0.05–0.77) had decreased odds of adolescent pregnancy compared to their rural counterpart-Antwikrom zone. Adolescents were also at increased odds of becoming pregnant when they were into apprenticeships (OR = 9.77, 95% CI 2.00–47.75) or unemployed (OR = 11.69, 95% CI 4.47–30.58) than being in school. Adolescents with low economic background (OR = 4.05, 95% CI 1.43–11.52) were 4.1 times more likely to get pregnant compared to those with high economic status.

Key factors associated with adolescent pregnancy have been established and these need attention from all stakeholders to forestall public and social health safety among adolescents.

1. Introduction

Adolescent pregnancies are linked to disadvantaged social and economic situations (Sedgh, Finer, Bankole, Eilers, & Singh, 2015). This phenomenon is regarded as a serious public health issue worldwide (World Health Organization, 2018). In low and middle income countries, about 21 million adolescent girls aged 15–19 years are estimated to get pregnant and about 16 million give birth annually (Darroch, Woog, Bankole, & Ashford, 2016; United Nations Population Fund, 2015). Globally, adolescent pregnancy is expected to increase by 2030, with high concentrations in sub-Saharan Africa (United Nations Population Fund, 2013). Already, the highest teenage pregnancy rates are recorded in Africa (Worldatlas, 2017). Records show high prevalence across the sub-Saharan Africa regions: 16.3% in Eastern, 27.9% in Western, and 28.9% in Southern Africa (Odimegwu & Mkwananzi, 2016). Ghana, from the western side, reports that about 14% of adolescent girls aged between 15 and 19 years have started childbearing with about 11% live birth rate (Ghana Statistical Service, 2014).

Adolescent pregnancy is associated with a higher risk of maternal and neonatal complications (Abbas, Ali, Ali, Fouly, & Altraigey, 2017). Adolescent mothers are at risk of complications including hypertensive pregnancy disorders, unsafe abortion, urinary tract infections, and premature rupture of the fetal membranes (Azevedo, Diniz, Fonseca, Azevedo, & Evangelista, 2015). Others include high risk of poor nutrition, anemia, sexually transmitted diseases, and a high rate of instrument delivery and caesarean section (Najati & Gojazadeh, 2010). Complications arising from pregnancy and childbirth are indicated to be the number one cause of death among adolescent girls (15–19 years) worldwide (World Health Organization, 2016).

Numerous factors documented to be major contributors to adolescent pregnancies include: societal and traditional norms such as early

* Corresponding author.
E-mail address: asiamahyeboah2006@yahoo.com (B.Y.-A. Asare).

https://doi.org/10.1016/j.ijans.2019.02.001
Received 18 July 2018; Received in revised form 25 January 2019; Accepted 6 February 2019
Available online 07 February 2019

marriage (Rutaremwa, 2013), childbearing as a measure of maturity and a means to elicit societal respect (Gyesaw & Ankomah, 2013), sexual abuse and living in violent communities (Brahmbhatt et al., 2014), lower level of education (Faisal-Cury et al., 2017; Raj, Bhattarai, Poobalan, van Teijlingen, & Chapman, 2010), and influence or pressure from peers (Mushwansa, Monareng, Richter, & Muller, 2015). Others elaborated include adolescent sexual behaviours such as unprotected sex and/or lack of use of contraceptives (Hindin & Fatusi, 2009), early sexual debut, frequent sexual intercourse and alcohol consumption (Panova, Kulikov, Berchtold, & Suris, 2016). Furthermore, family related factors such as divorce or non-intact family structure (Panova et al., 2016), history of maternal and sibling adolescent pregnancy (Akella & Jordan, 2015; East, Reyes, & Horn, 2007) and poor family economic status (Akella & Jordan, 2015; Nyovani, Zulu, & Ciera, 2007) have all been noted. Chandra et al have also reported of media influence on adolescent early sexual behavior as a risk factor of adolescent pregnancy (Chandra et al., 2008).

Between 2012 and 2014, 5 regions including the Brong Ahafo Region, where the current study was done, recorded the highest adolescent pregnancy rates of more than 14% (Ghana Statistical Service, 2014). In the Sunyani Municipality, the recent rate of adolescent pregnancy was 8.3% recorded in 2017 as one of the highest rates in Ghana (Sunyani Municipal Health Directorate). It is therefore important that key local risk factors associated with this public health problem are established. Adequate knowledge and understanding of these factors could help inform the most appropriate and effective interventions. The findings from this study in the municipality provide the contextual evidence as expected in a case study to draw the attention of authorities and all stakeholders towards solution development. This study was aimed at determining the factors associated with adolescent pregnancy in the Sunyani Municipality.

2. Materials and methods

2.1. Study design and area

This was a quantitative, unmatched case-control study conducted in the Sunyani Municipality from the May 1 to June 30, 2015 to determine factors associated with adolescent pregnancy. Sunyani Municipality is host to the regional capital for the Brong Ahafo Region. According to the 2010 population census, the Sunyani Municipality has a total population of 123,224 and 13,614 of them are aged 15–19 years of which 6,933 are females (Ghana Statistical Service, 2012). About 45% of the populace are into farming and are mostly of the Akan ethnicity (Ghana Statistical Service, 2012). The municipality have thirty (30) health facilities and out of these eighteen (18) facilities provide antenatal and postnatal services for the community.

2.2. Study population and sample

The study involved two groups of adolescent females (cases and controls) between the ages of 15 and 19 years who are residents of the Sunyani Municipality. Cases were adolescents who were 15 years and above but had not celebrated their 19th birthday and were either pregnant or had given birth to at least one child who resided and attended antenatal or postnatal clinics within the municipality. The controls on the other hand were adolescent girls who were 15 years and above but have not yet celebrated their 19th birthday, who were neither pregnant nor given birth before and lived within the same community as the cases. Female adolescents who had been pregnant before but aborted before term were excluded from the study.

The sample study size for an unmatched case-control comparison of pregnant and non-pregnant was calculated using Epi Info based on the following assumptions: adolescent female population of 6933, 50% exposure among non-pregnant group, 95% confidence interval, and power of 80%. The total sample size of 245 was estimated and using a case to control ratio of 1:1, 120 cases and 125 controls were included in the study.

2.3. Sampling procedure

The Sunyani Municipality has six (6) sub-health districts namely Sunyani central, Pankwase, New Dormaa, New Town/Baakoniaba, Abesim and Antwikrom. These were stratified into 4 zones; Sunyani zone comparing of Sunyani central and New Town/Baakoniaba districts, Abesim zone, New Dormaa zone comparing of Pankwase and New Dormaa districts, and Antwikrom zone. Sunyani, Abesim and New Dormaa zones are of urban setting while the Antwikrom zone is of a rural setting. Stratification was done based on background characteristics, homogeneity and proximity of the districts. Stratified sampling were not equally divided between the 4 zones. The pregnant and/or parenting adolescents were identified from the admission/registration records of the 18 health facilities which offer antenatal and postnatal services in these zones. Based on the records, 135 cases were identified and were approached during their attendance at the health facilities for antenatal and postnatal care over the study period of two months (May 1 to June 30, 2015). The 120 cases who consented to participate in the study were recruited with assistance of nurses in-charge of the health facilities. Controls were recruited from the communities in the zones where the health facilities are located. A multistage sampling technique was employed to select the control for the study. In each of the 4 stratified zones, a systematic random sampling was used as described by Aminde et al. (2017). In houses where there were no adolescent girls, the next house was used as a replacement.

2.4. Data tool and collection

A structured questionnaire was used to collect data from May 1 to June 30, 2015. The questionnaire was administered through face-to-face interviews using eight research assistants (as interviewers) who were recruited and trained for this purpose. The questionnaire was pretested in the Sunyani West District, an adjoining district, where the adolescents have similar characteristics as those in the study area. The questionnaire was revised with the necessary corrections from the pretesting and field reviews before the main data collection campaign. The final revised questionnaire was used for both the case and control study groups. The questionnaire was designed in English language, administered designed but interviewers translated all questions into local language Akan Twi for respondents. The approach and content of questionnaire translation into the local dialect was part of the enumerators' training, where the team discussed and reach common grounds on specific words, phrases and jargons for capturing consistent, valid, reliable and uniform data. The average time for an interview was about 20 min per respondent. In the cases, data collection was done at the health facilities after they have been attended to by the nurses for their ante and/or post-natal services. In the controls, data was collected at their homes in their communities. All the interviews were conducted under anonymity of respondent respecting their privacy, thus all administered questionnaires were identified only with codes. The questionnaire collected data on key themes including socio-demographic characteristics of adolescent respondents and their parents, sexual behaviour, social media affiliation and influence, certain practices and others. The economic status of parents or guardians was calculated based on their assets, using the Principal Component Analysis (PCA) method. The PCA helps to estimate the wealth levels using assets of persons as wealth indicator (Códova, 2008). Assets such as television, washing machine, sewing machine, refrigerator, mobile phones, car, houses and farms were used as a proxy measure of respondents' economic status.

2.5. Data processing and analysis

Data collected were entered and analysed using STATA version 12. Data were presented in frequencies and percentages for descriptive purposes. The Pearson's chi-square test was first done to determine the relationships between adolescent pregnancy and the independent variables. Multiple regression analysis was further carried out to assess the odds of the factors associated with adolescent pregnancy. In a stepwise manner, statistically significant associations of variables at $p < 0.05$ with the chi-square analysis allowed selection of variables for the multiple regression model and control of possible confounders. Results were expressed in terms of adjusted Odds Ratios (OR) and their corresponding 95% confidence intervals (CI).

3. Results

The study comprised of 120 cases and 125 controls. The mean age of the respondents was 16.9 ± 1.15 years (cases; 17.3 ± 0.09 years and controls; 16.6 ± 0.12 years). More of the cases were aged between 17 and 18 years (81.7% vs 48.8%; $p < 0.001$), married (9.2% vs 0.0%; $p < 0.001$), and had no formal education (10.5% vs 2.4%; $p = 0.001$) compared to the controls. Furthermore, significant proportion of the cases were unemployed (40.0% vs 13.6%; $p < 0.001$) and had low economic status (50.0% vs 23.2%; $p < 0.001$) compared to the controls. The socio-demographic characteristics of the respondents are showed in Table 1.

Social media affiliation (74.0% vs 54.2%; $p < 0.001$) and having parents alive (88.8% vs 72.5%; $p < 0.001$) were significantly high among the controls than cases. Among cases, contraceptive use (49.0% vs 33.6%; $p = 0.023$) was high and most were currently involved sexual relationships (70.0% vs 49.6%; $p = 0.001$) than in the controls (Table 2).

The multiple logistic regression analysis shows that place of residence, current occupation, and economic status were the main independent influential factors of adolescent pregnancy within the study area. Adolescents who lived in urban areas namely Abesim (OR = 0.07, 95% CI = 0.01–0.35) and New Dormaa (OR = 0.19, 95% CI = 0.05–0.77) were at lower risk of getting pregnant compared to those who stayed at Antwikrom zone, a rural setting. The risk of adolescent pregnancy was 4.1 times higher among adolescents with lower economic status compared to those with higher economic status (OR = 0.25, 95% CI = 0.09–0.70). Adolescents who were into apprenticeships (OR = 9.77, 95% CI = 2.00–47.75) and those unemployed (OR = 11.69, 95% CI = 4.47–30.58) were more prone to becoming pregnant compared to those still in school (Tables 3).

Table 1
Distribution of variables in adolescent pregnancy cases and controls for demographic characteristics.

Socio-demographic factors	Frequency (%)		Pearson chi-square*P*-value
	Cases (n = 120)	Controls (n = 125)	
Residence			
Sunyani	72(60.0)	33(26.4)	
Abesim	6(5.0)	40(32.0)	< 0.001*
Atronie	28(23.3)	20(16.0)	
New Dormaa	14(11.7)	32(25.6)	
Age, years			
15–16	22(18.3)	64(51.2)	
17–18	98(81.7)	61(48.8)	< 0.001*
Marital status			
Single	66(55.0)	109(87.2)	
Co-habiting	43(35.8)	16(12.8)	< 0.001*
Married	11(9.2)	0(0.0)	
Educational level			
No formal education	13(10.8)	3(2.4)	
Primary	22(18.3)	8(6.4)	
JHS	59(49.2)	77(61.6)	0.001*
SHS	26(21.7)	37(29.6)	
Current occupation			
Student	34(28.3)	105(84.0)	
Apprenticeship	38(31.7)	3(2.4)	< 0.001*
Unemployed	48(40.0)	17(13.6)	
Religious affiliation			
Christians	87(72.5)	90(72.0)	
Muslims	33(27.5)	35(28.0)	0.930
Ethnic background			
Akan	48(40.0)	68(54.4)	
Ga	7(5.8)	11(8.8)	
Ewe	10(8.3)	7(5.6)	0.058
Mole-Dagbani	55(45.8)	39(31.2)	
Economic status			
Low	60(50.0)	29(23.2)	
Medium	35(29.2)	40(32.0)	< 0.001*
High	25(20.8)	56(44.8)	

JHS = Junior High School; SHS = Senior High School.
* Statistically significant at p = 0.05.

4. Discussion

The purpose of this study was to find out the factors that influence adolescent pregnancy in the Sunyani Municipality. Place of residence, current occupation and economic status were found to be strongly associated with adolescent pregnancy.

The study revealed that adolescents who resided in the urban settings were less prone to becoming pregnant than those who lived in rural areas. This finding is consistent with the report of the 2014 Ghana Demographic Health Survey, which emphasized that adolescents in rural areas are more likely to begin childbearing at an early age (Ghana Statistical Service, 2014). Across sub-Saharan Africa rural residence has been identified to increase the likelihood of teenage pregnancy (Odimegwu & Mkwananzi, 2016). These locations are frequently associated with poverty, and the practices of cultural and traditional beliefs which promote early and child marriages (Odimegwu & Mkwananzi, 2016). This evidence prompts for intensifying efforts like educational campaigns and institutionalization of strict legal framework on addressing adolescent pregnancy in these locations.

The current study found that adolescents who were of low economic status had increased risk of getting pregnant. This finding is similar to the study by Palermo and Peterman (2009) where low socio-economic status was associated with teenage pregnancy in ten African countries over a 3-year period. Partly because adolescents with low economic status in their quest to meet their basic needs become prone to sexual exploitation from adults (Yakubu & Salisu, 2018). Such sexual relationships with adults for basic needs, invariably create a power difference making adolescents incapable to ask for safe sex leading to teenage pregnancy and the spread of sexually transmitted infections (Yakubu & Salisu, 2018). Unfortunately, populations living in the rural settings have low economic status compared those in the urban areas (Cooke, Hague, & McKay, 2016). The statistically significant association observed for place of residence (rural and urban) and economic status in our current study emphasizes the importance of the contextual environment of teenagers as equally as critical to the personal factors that influence teenage pregnancy as argued by Odimegwu and Mkwananzi (2016).

This current study reports that adolescents who were either into apprenticeship or unemployed compared to those in school were at increased odds of adolescent pregnancy. This is consistent with an earlier finding in South Africa where adolescents either employed or unemployed were more likely to get pregnant than those who were students (Mchunu, Peltzer, Tutshana, & Seutlwadi, 2012). In Ghana adolescents are mostly financially dependent and their needs are mostly catered for when they are in school by their parents or guardians. This

Table 2
Distribution of variables in adolescent pregnancy cases and controls for selected characteristics.

Characteristics	Frequency (%)		Pearson chi-square *P*-value
	Cases (n = 120)	Controls (n = 125)	
Social media affiliation			
No	55(45.8)	30(24.0)	
Yes	65(54.2)	95(74.0)	< 0.001*
Age at first sex			
10–14 years	42(35.0)	18(30.0)	
15–18 years	78(65.0)	42(70.0)	0.502
Initiation of sex			
Non-consensual sex	48(40.0)	22(36.7)	
Consensual sex	72(60.0)	38(63.3)	0.665
Sisters being adolescent mother			
No	94(78.3)	104(83.2)	
Yes	26(21.7)	21(16.8)	0.333
Received sex education			
No	2(1.7)	1(0.8)	
Yes	118(98.3)	124(99.2)	0.537
Parents still married			
No	34(39.1)	32(28.8)	
Yes	53(60.9)	79(71.2)	0.129
Contraceptive knowledge			
No knowledge	18(15.0)	15(12.0)	0.492
Knowledge	102(85.0)	110(88.0)	
Contraceptive use			
Never used	52(51.0)	73(66.4)	
Used	50(49.0)	37(33.6)	0.023*
Current relations			
No	36(30.0)	63(50.4)	
Yes	84(70.0)	62(49.6)	0.001*
Parents alive			
No	33(27.5)	14(11.2)	
Yes	87(72.5)	111(88.8)	0.001*

* Statistically significant at $p < 0.05$.

Table 3
Factors that influence adolescent pregnancy in the Sunyani Municipality.

Factors	OR	95% CI	p-value
Location			
Antwikrom(ref)	1		
Abesim	0.07	0.01–0.35	< 0.001*
Sunyani	0.99	0.30–3.19	0.981
New Dormaa	0.19	0.05–0.77	0.006*
Age, years			
15–16(ref)	1		
17–18	2.37	0.93–6.03	0.070
Marital status			
Single (ref)	1		
Co-habiting	1.11	0.39–3.14	0.843
Married			
Educational level			
SHS (ref)	1		
JHS	1.70	0.66–4.40	0.271
Primary	1.38	0.22–8.60	0.727
No formal education	1.04	0.16–6.63	0.965
Current occupation			
Student (ref)	1		
Apprenticeship	9.77	2.00–47.75	0.005*
Unemployed	11.69	4.47–30.58	< 0.001*
Social media affiliation			
No(ref)	1		
Yes	1.10	0.38–3.13	0.856
Parents alive			
Yes (ref)	1		
No	1.71	0.33–2.05	0.325
Economic status			
High (ref)	1		
Medium	1.98	0.73–5.37	0.182
Low	4.05	1.43–11.52	0.009*
Contraceptive use			
Used (ref)	1		
Never used	0.50	0.23–1.12	0.092
Current relations			
No (ref)			
Yes	0.82	0.33–2.05	0.677

JHS = Junior High School; SHS = Senior High School; ref = reference for the categorical group; OR = odds ratio; CI = confidence interval.
* Statistically significant at $p < 0.05$.

is not so for most of the adolescents who are not in school but are either learning a trade or unemployed, thus they are enticed into sexual relationships in order to meet their financial needs (Krugu, Mevissen, Münkel, & Ruiter, 2017). Furthermore, it has being stated that education (schooling) increases the age at first sexual intercourse and delays marriage (Waszak, Thapa, & Davey, 2003). Raj and colleagues have also argued that sex education in schools could assist in giving power to girls, to best place them for late marriage, planned and delayed pregnancy and better motherhood (Raj et al., 2010). This means that the current Ghanaian government policy on Free Senior High School education may contribute to fighting some of the teenage pregnancies in the country.

5. Limitation to the study

The study drew respondents from only one district, a local government jurisdiction (Sunayni Municipality) in the Brong Ahafo region of Ghana, and as such generalizing the findings from the study to the others districts of the region or to whole country is limited.

6. Conclusion

The study found three major risk factors: place of residence, occupation and economic status, as mainly associated with adolescent pregnancy. Rural teenagers are more prone to early pregnancy than their urban counterparts largely because of their lower economic status. Adolescents enrolled and active in school are less likely to suffer from teenage pregnancies than their colleagues who are in vocation or apprenticeship and/or unemployed. The evidence suggests that teenagers in school are better supported and taken care of especially in meeting their financial needs. For policy and practice, the following are recommended: 1) teenage education (schooling) should be strongly encouraged especially among girls to ensure longer stay in school; and 2) also there should be provision of economic and social opportunities to empower poor and vulnerable families and female adolescents particularly those living in rural areas.

Conflict of interest

The authors declare no competing interest

Funding

The study was funded by the Palladium Ghana, under the Ghana Adolescent Reproductive Health Project. The funders were not involved in the design of study, collection, analysis and interpretation of data, writing of the report and decision to submit the article for publication.

Ethical approval and consent to participants

Ethical clearance for the study was obtained from the Ghana Health Service (GHS) Ethical Review Committee (GHS-ERC: 93/02/15) and letters of permission was sought from the Sunyani Municipal Assembly, the Regional Health Directorate and the Municipal Health Directorate. An informed written consent was obtained from either parents and/or guardians for adolescents who were below 18 years, and all participants voluntarily participated in the study.

Acknowledgement

The authors express their sincere gratitude to the Ghana Adolescent Reproductive Health Project, Palladium Ghana, for their financial support and all the nurses in-charge of the ante- and post-natal health facilities visited and our cherished participants who voluntarily contributed to the success of the study.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ijans.2019.02.001.

References

Abbas, A. M., Ali, S. S., Ali, M. K., Fouly, H., & Altraigey, A. (2017). The maternal and neonatal outcomes of teenage pregnancy in a tertiary university hospital in Egypt. *Proceedings in Obstetrics and Gynecology, 7*(3), 1.

Akella, D., & Jordan, M. (2015). Impact of social and cultural factors on teen pregnancy. *Journal of Health Disparities Research and Practice, 8*(1).

Aminde, L. N., Takah, N., Ngwasiri, C., Noubiap, J. J., Tindong, M., Dzudie, A., et al. (2017). Population awareness of cardiovascular disease and its risk factors in Buea, Cameroon. *BMC Public Health, 17*(545).

Azevedo, W. F., Diniz, M. B., Fonseca, E. S., Azevedo, L. M., & Evangelista, C. B. (2015). Complications in adolescent pregnancy: Systematic review of the literature. *Einstein (Sao Paulo, Brazil), 13*(4), 618–626.

Brahmbhatt, H., Kågesten, A., Emerson, M., Decker, M. R., Olumide, A. O., Ojengbede, O., et al. (2014). Prevalence and determinants of adolescent pregnancy in urban disadvantaged settings across five cities. *Journal of Adolescent Health, 55*(6).

Chandra, A., Martino, S. C., Collins, R. L., Elliott, M. N., Berry, S. H., Kanouse, D. E., et al. (2008). Does watching sex on television predict teen pregnancy? Findings from a national longitudinal survey of youth. *Pediatrics, 122*, 1047–1054.

Códova, A. (2008). Methodological note: Measuring relative wealth using household asset indicators. *Americas Barometer Insights, 6*, 1–9.

Cooke, E., Hague, S., & McKay, A. (2016). *The Ghana poverty and inequality report: using the 6th Ghana Living Standards Survey 2016*. Available at https://www.unicef.org/ghana/Ghana_Poverty_and_Inequality_Analysis_FINAL_Match_2016(1).pdf. (Accessed on 24 November 2018).

Darroch, J. E., Woog, V., Bankole, A., & Ashford, L. S. (2016). *Adding it up: costs and benefits of meeting contraceptive needs of adolescents*. New York (NY): Guttmacher Institute. Available at https://www.guttmacher.org/sites/default/files/report_pdf/adding-it-up-adolescents-report.pdf. (Accessed on 20 February 2018).

East, P. L., Reyes, B. T., & Horn, E. J. (2007). Association between adolescent pregnancy and a family history of teenage births. *Perspectives on Sexual and Reproductive Health, 39*(2).

Faisal-Cury, A., Tabb, K. M., Niciunovas, G., Cunningham, C., Menezes, P. R., & Huang, H. (2017). Lower education among low-income Brazilian adolescent females is associated with planned pregnancies. *International Journal of Women's Health, 9*, 43–48.

Ghana Statistical Service (GSS), Ghana Health Service (GHS), & ICF Macro (2014). *Ghana Demographic and Health Survey*. Accra: GSS, GHS, & ICF Macro.

Ghana Statistical Service (GSS). (2012). *Population by Regions, Districts, Age and Sex in Ghana population and housing census report, 2010*. Accra, Ghana: GSS. Available at http://www.statsghana.gov.gh/docfiles/2010_District_Report/Brong%20Ahafo/Sunyani% 20Municipal.pdf. (Accessed on 27 March 2018).

Gyesaw, K. N. Y., & Ankomah, A. (2013). Experiences of pregnancy and motherhood among teenage mothers in a suburb of Accra, Ghana: A qualitative study. *International Journal of Women's Health, 5*, 773–780.

Hindin, M. J., & Fatusi, A. O. (2009). Sexual and reproductive health in developing countries: An overview of trends and interventions. *International Perspectives on Sexual and Reproductive Health, 35*, 58–62.

Krugu, J. K., Mevissen, F., Münkel, M., & Ruiter, R. (2017). Beyond love: A qualitative analysis of factors associated with teenage pregnancy among young women with pregnancy experience in Bolgatanga, Ghana. *Culture, Health and Sexuality, 19*(3), 293–307.

Mchunu, G., Peltzer, K., Tutshana, B., & Seutlwadi, L. (2012). Adolescent pregnancy and associated factors in South African youth. *African Health Sciences, 12*(4), 426–434.

Mushwansa, L., Monareng, L., Richter, S., & Muller, H. (2015). Factors influencing the adolescent pregnancy rate in the Greater Giyani Municipality, Limpopo Province-South Africa. *International Journal of Africa Nursing Sciences, 2*, 10–18.

Najati, N., & Gojazadeh, M. (2010). Maternal and neonatal complications in mothers aged under 18 years. *Patient Prefer Adherence, 4*, 219–222.

Nyovani, M., Zulu, E., & Ciera, J. (2007). Is poverty a driver for risky sexual behaviour? Evidence from national surveys. *African Journal of Reproductive Health, 11*, 83–98.

Odimegwu, C., & Mkwananzi, S. (2016). Factors Associated with Teen Pregnancy in sub-Saharan Africa: A multi-country cross-sectional Study. *Afr J Reprod Health, 20*(3).

Palermo, T., & Peterman, A. (2009). Are female orphans at risk for early marriage, early sexual debut, and teen pregnancy? Evidence from sub-Saharan Africa. *Studies in Family Planning, 40*(2), 101–112.

Panova, O. V., Kulikov, A. M., Berchtold, A., & Suris, J. C. (2016). Factors associated with unwanted pregnancy among adolescents in Russia. *Journal of Pediatric and Adolescent Gynecology, 29*(5).

Raj, D. A., Bhattarai, R., Poobalan, A., van Teijlingen, E. R., & Chapman, G. (2010). Factors associated with teenage pregnancy in South Asia: A systematic review. *Health Science Journal, 4*(1).

Rutaremwa, G. (2013). Factors associated with adolescent pregnancy and fertility in Uganda: Analysis of the 2011 demographic and health survey data. *American Journal of Sociological Research, 3*(2).

Sedgh, G., Finer, L. B., Bankole, A., Eilers, M. A., & Singh, S. (2015). Adolescent pregnancy, birth, and abortion rates across countries: Levels and recent trends. *Journal of Adolescent Health, 56*(2).

United Nations Population Fund (UNFPA). (2013). *Adolescent pregnancy: a review of the evidence*. Available at https://www.unfpa.org/sites/default/files/pubpdf/ADOLESCENT%20PREGNANCY_UNFPA.pdf. (Accessed on 13 February 2018).

United Nations Population Fund (UNFPA). (2015). *Girlhood, not motherhood: preventing adolescent pregnancy*. Available at https://www.unfpa.org/sites/default/files/pubpdf/Girlhood_not_motherhood_final_web.pdf. (Accessed on 13 February 2018).

Waszak, C., Thapa, S., & Davey, J. (2003). The influence of gender norms on the reproductive health of adolescents in Nepal-perspectives of youth. In Sarah Bott (Ed.). *Towards adulthood, exploring the sexual and reproductive health of adolescents in South Asia* (pp. 81–85). Geneva: World Health Organization.

World Health Organization. (2016). *Global health estimates 2015: deaths by cause, age, sex, by country and by region, 2000–2015*. Geneva: WHO. Available at http://www.who.int/healthinfo/global_burden_disease/estimates/en/index1.html. (Accessed on 13 February 2018).

World Health Organization (WHO). (2018). *Adolescent pregnancy*. Geneva: WHO. Available at http://who.int/mediacentre/factsheets/fs364/en/. (Accessed on 13 February 2018).

Worldatlas. (2017). *World Facts: highest teen pregnancy rates worldwide 2015*. Available from:http://www.worldatlas.com/articles/highest-teen-pregnancy-rates worldwide.html. (Accessed on 24 November 2018).

Yakubu, I., & Salisu, W. J. (2018). Determinants of adolescent pregnancy in sub-Saharan Africa: A systematic review. *Reproductive Health, 15*(15).