Teen Pregnancy in Sub-Saharan Africa:

The Application of Social Disorganisation Theory

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Abstract

Teenage or adolescent pregnancy is noted as a major public health and demographic problem with medical, psychological, social and demographic implications. While different theories have been tested in existing studies, the theory of social disorganisation has not been applied in investigating teenage pregnancy. The social disorganisation theory is an example of an ecological framework and posits that crime is not randomly distributed, but occurs more frequently in 'bad' neighbourhoods than in 'good' neighbourhoods (Shaw and McKay; 1942). Using this theory and DHS surveys of eleven countries, we modelled females aged 15-19 with multilevel logistic regression to explore teenage pregnancy in West, East and Southern Africa. Teenage pregnancy was associated with community levels of poverty and unemployment while it was not associated with the head of the household's age. Therefore, the study increases the understanding of teenage pregnancy within SSA regions.

Introduction

Teenage pregnancy remains a challenge requiring urgent resolution the world over (United Nations Population Fund, 2013). In 2014 the World Health Organization reported that 11% of all births were due to women aged 15-19 years (World Health Organization, 2014). Approximately 95% of teenage pregnancies occur in developing countries with 36.4 million women becoming mothers before age 18 (United Nations Population Fund, 2013).

Sub-Saharan Africa had the highest prevalence of teenage pregnancy in the world in 2013 (United Nations Population Fund, 2013). Births to teenage mothers account for more than half of all the births in this region: an estimated 101 births per 1000 women aged 15 to 19 (ibid). The majority of countries with teenage pregnancy levels above 30% occur in sub-Saharan Africa (Loaiza & Liang, 2013). Therefore, government and non-governmental organisations (NGOs) have attempted to address this via policies and other initiatives. Despite huge investments and refinement of these policies: Teenage pregnancy continues to reach crisis proportions in most African countries (UNFPA, 2010).

Recent studies on teenage pregnancy in the subcontinent have looked at individual level demographic, socio-economic and reproductive health knowledge and behaviour parameters (Molosiwa & Moswela, 2012; Nwogwugwu, 2013; Nyakubega, 2010). This research has identified education and socio-economic status as consistent determinants of teenage pregnancy in sub-Saharan African countries. Other studies have explored the effect of household variables on teenage pregnancy in Nigeria, Kenya, and Lesotho showing household size and parents' marital status as significant predictors of teenage pregnancy (Ifeoma, 2008; Ugoji, 2011).

However, previous studies have failed to incorporate social disorganisation as a possible driving factor of teenage pregnancy on the continent. Social disorganisation was defined by Bursik (1988) as the inability of community members to solve jointly experienced problems. The theory of social disorganisation is classically applied to explain geographical variations in violence and crime (Elliot & Merrill, 1961; Kubrin, 2009). In 2013, birth rates ranged from 150 or higher to less than 50 births per 1000 women of ages 15 to 19 in the sub-continent, with Central Africa displaying the highest levels and Southern Africa having the lowest (Clifton & Hervish, 2013). These vast disparities in birth rates among teenagers across the continent indicate that factors beyond the individual level may influence teenage pregnancy. Therefore, it is important to test the applicability of the social disorganisation theory in explaining sub-regional variations in the levels of teenage pregnancy. This study draws upon social disorganisation theory to identify household and community characteristics that predict teenage pregnancy while controlling for socio-demographic and reproductive factors. The study's objective was to identify the social disorganisation predictors of teenage pregnancy in West, East and Southern sub-Saharan Africa.

Data and Methods

Data on teenage pregnancy were compiled for 11 countries from Demographic and Health Surveys (DHSs). For the purposes of this study countries were divided into regions along traditional geographic boundaries. East Africa was represented by Ethiopia, Rwanda, Tanzania, and Uganda, West Africa by Cote d'Ivoire, Niger, Nigeria, and

Senegal and Southern Africa by Malawi, Mozambique and Zimbabwe). Only one country from Central Africa met the required criteria being Cameroon. Therefore, central Africa was omitted from the analysis as not enough countries qualified to represent the sub-region adequately. Females, aged 15 to 19 years old were selected for the analysis. From this group all ever pregnant individuals were compared with those that had never been pregnant at the time of the survey.

Outcome Variable:

The dependent variable of the study was ever pregnant – This included teenage females who were currently pregnant at the time of the survey, those that had one or more children as well as girls who had terminated a pregnancy in the past. All female respondents aged 15-49 were asked questions on current pregnancy status, dates and survival status of all births as well as previous termination of pregnancies. The study considered all females aged 15-19 who answered affirmatively to any of the three areas as the ever pregnant sample and compared them to 15-19 year old girls who had never been pregnant at the time of the survey.

Predictor Variables:

Independent variables encompassed socio-demographic and reproductive-related individual factors as well as social disorganisation factors at the household and community levels. Individual independent variables included age, ever married, education attainment, employment status, age of sexual debut and partner's age. Household level variables included sex of household head, age of household head, wealth index and family disruption. The community variables included community poverty, family disruption and unemployment. These were tested to establish the effect of social disorganisation at household and community level on teenage pregnancy in West, East and Southern Africa.

Statistical Analysis:
Descriptive Statistics
National levels of teenage pregnancy in the 11 countries included in the study were collected with the aid of StatsCompiler. These levels were organised and averaged at sub-regional level then graphed to show trends in teenage pregnancy levels for East, West and Southern Africa.

Univariate and bivariate analysis entailed description of all study participants followed by ever pregnant respondents by individual, household and community variables. Values for categorical variables were shown as absolute numbers and percentages while the mean and standard deviations or median and inter-quartile ranges of the continuous variables were recorded.

Inferential Statistics

STATA 12 was used for data cleaning, descriptive and inferential analysis. Selection of variables for multivariate multilevel regression was conducted using backward stepwise regression at 10% significance level. Multilevel binary logistic regression established the association between independent variables and teenage pregnancy. Teenage pregnancy was fitted to the models- This is a dichotomous outcome with possible responses of 'yes' or 'no'. Representation of the model is as follows:

$$\log\left(\frac{\pi_{ijk}}{1-\pi_{ijk}}\right) = \delta_{0ijk} + \sum_{ijk=1}^{\omega} \delta_{ijk} \, z_{ijk} + \varepsilon_{ijk} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where: π_{ijk}=probability of having a positive event for the ith individual in the jth household of the kth community

δs are parameters of the model   zs are regressors ε_{ijk} are the residuals

The model adjusted for individual, household and community level variables yet allowed for heterogeneity between individuals and communities only. The two-level model established variation between individuals as well as between communities in the risk of the outcome. Simple logistic and Poisson regression would fail to capture this accurately as members within communities are similar therefore violating the assumption of independence of residuals and underestimating standard errors (Kawachi & Subramanian, 2007; Merlo, 2003; Subramanian, 2004). Teenage pregnancy was regressed on independent variables using three models. Model one, two and three considered individual, individual and household, individual, household and community variables, respectively. Separate models for each sub-region-West, East and Southern Africa were conducted.

Main Findings

Descriptive Outcome

The levels and trend of teenage pregnancy per region in sub-Saharan Africa from 1992 to 2011 are shown in Figure 1. The level of teenage pregnancy for all sub-regions was similar in 1992 yet the trajectories varied. East Africa had the highest level in 1992, decreasing in 2000 and 2005 to have the lowest level in 2011 at 16.3%. On the other hand, West Africa's level of teenage pregnancy from 1992, decreased slightly to reach 27.9% in 2011. Finally, the level of teenage pregnancy in Southern Africa was the lowest in 1992, increased in 2005 and was the highest in 2011 with a level at 28.9%.

Figure 1: Teenage Pregnancy Levels and Trend in sub-Saharan Africa
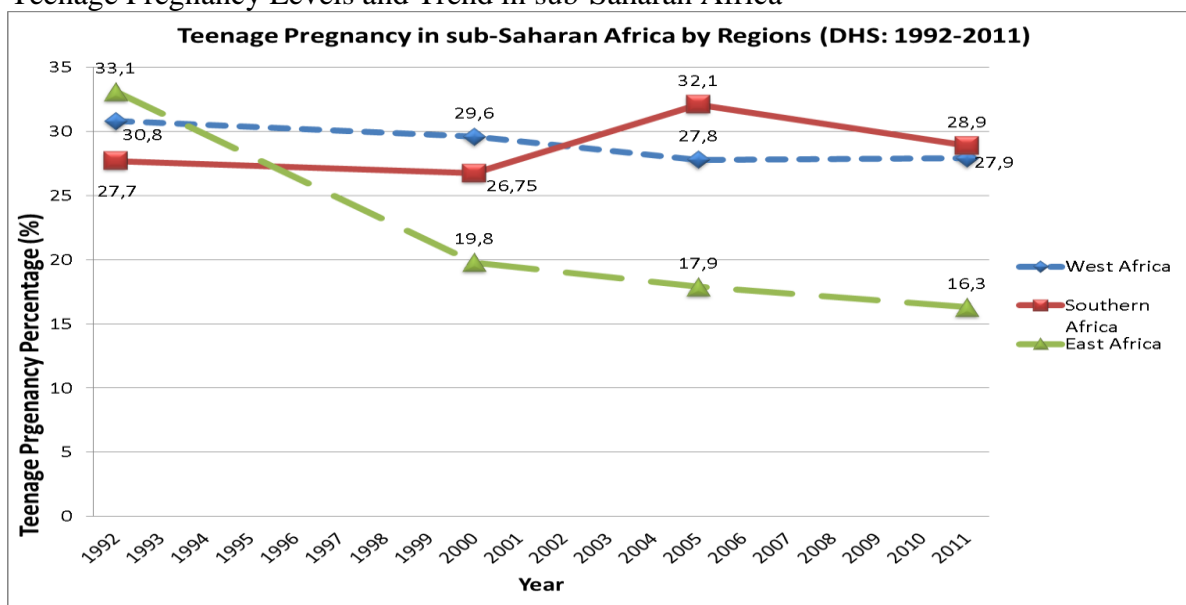
Source: Demographic and Health Survey StatsCompiler

General characteristics of the study population were computed per variable for each sub-region. Fewer teenage females were pregnant compared to those that were not pregnant in every sub-region. Participants were mainly from rural areas, unemployed and living in households headed by males without family disruption. The majority of study participants resided in communities with low levels of female unemployment and family disruption as well as high levels of poverty. However, differences existed between sub-regions with East and

Southern African girls being very similar in most characteristics while the majority of girls from West Africa were uneducated or attending primary school and living in rural (56%) and urban areas (44%) equally.

Teenage females who had been pregnant across sub-Saharan Africa had an average age of 18 years and were mainly married in East and West Africa, but never married in Southern Africa. The majority of them were also unemployed, primary school graduates, having sexual debut at age 16 or above in East and Southern Africa and living in households without family disruption. Conversely, West African girls who had been pregnant were uneducated and had their first sexual encounters during marriage. In all sub-regions the teenage females emanated from communities with high levels of poverty and low levels of female unemployment.

Inferential Outcome

Different individual, household and community level factors were chosen for inclusion in the final models by stepwise regression. Stepwise regression included education level, age, age of sexual debut and employment status for all sub-regions. Family disruption and community levels of female unemployment were included for East and Southern Africa yet excluded for West Africa. Place of residence was included for East and West Africa yet excluded for Southern Africa. Finally, wealth index and the community level of poverty were included for West Africa only.

Surprisingly, family disruption was shown to significantly decrease the odds of pregnancy in both East and Southern Africa. As the community levels of female unemployment increased, the odds of pregnancy increased in Southern Africa, yet decreased in East Africa. These differences may be due to cultural and regional economic differences that exist in the two sub-regions. In West Africa, community poverty increased the likelihood of pregnancy while living in urban areas decreased the likelihood of pregnancy by 50%. Also, teenagers from wealthier households were protected from pregnancy compared to their counterparts from poorer households in West Africa.

Females with primary education had slightly higher odds of pregnancy compared to those without any schooling, but secondary and higher levels of education decreased the odds of pregnancy significantly. The odds of pregnancy increased slightly with increasing age of sexual debut increased in all sub-regions. Further analysis as well as verification of the present results is needed to explain the sub-regional differentials and reasons for the differences.

Conclusion

This is the first study that looks at differences in teenage pregnancy across sub-regions of sub-Saharan Africa. Stark sub-regional differentials exist in social disorganisation precursors associated with teenage pregnancy in sub-Saharan Africa even when individual characteristics are controlled for. This shows the varied influence of social disorganisation on teenage pregnancy across sub-Saharan Africa. Therefore, there is a need to establish sub-regional specific policies aimed at preventing teenage pregnancy and empowering teenage females in sub-

Saharan Africa. This research remains a work in progress with the above preliminary results being the first step towards understanding the influence of social disorganisation on pregnancy among teenage females in sub-Saharan Africa.

References

Bursik, R. J. (1988). Social disorganization and theories of crime and delinquency: Problems and prospects*. *Criminology, 26*(4), 519-552.

Clifton, D., & Hervish, A. (2013). The World's Youth 2013 Data Sheet. *Washington DC: Population Reference Bureau*.

Elliot, M., & Merrill, F. (1961). *Social Disorganization* (F. Chapin Ed. Fourth ed.). New York: Harper & Brothers.

Ifeoma, G. F. (2008). *The effect of household characteristics on adolescent childbearing in Lesotho.* (Master of Arts), University of the Witwatersrand.

Kawachi, I., & Subramanian, S. V. (2007). Neighbourhood influences on health. *Journal of epidemiology and community health, 61*(1), 3-4. doi: 10.1136/jech.2005.045203

Kubrin, C. (2009). Social Disorganization Theory: Then, Now and in the Future. In Krohn (Ed.), *Handbook on Crime and Deviance*: Springer Science and Business Media.

Loaiza, E., & Liang, M. (2013). Adolescent Pregnancy: A Review of Evidence. New York: United Nations Population Fund,.

Molosiwa, S., & Moswela, B. (2012). Girl-pupil dropout in secondary schools in Botswana: Influencing factors, prevalence and consequences. *International Journal of Business and Social Science, 3*(7), 265-271.

Nwogwugwu, N. C. (2013). *Socio-demographic determinants of adolscent fertility in Zambia.* (Masters of Arts), University of the Witwatersrand.

Nyakubega, P. (2010). Factors associated with adolescent pregnancies among secondary school students. a study from Tanga-Tanzania. *Dar Es Salaam Medical Students' Journal, 16*(1), 31-34.

Subramanian, S. (2004). The relevance of multilevel statistical methods for identifying causal neighborhood effects. *Social science & medicine, 58*(10), 1961-1967.

Ugoji, F. (2011). Parental marital status and peer influence as corelates of teenage pregnancy among female teens in south-South Nigeria. *Gender and Behaviour, 9*(2), 4125-4138.

United Nations Population Fund. (2013). Motherhood in Childhood: Facing the challenge of adolescent pregnancy. New York: UNFPA.

World Health Organization. (2014). Adolescent Pregnancy.   Retrieved 2 April, 2014, from http://www.who.int/maternal_child_adolescent/topics/maternal/adolescent_pregnancy/en/