Perception of risk of HIV infections among adolescents living in an urban slum in Ghana

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Abstract

With the period of adolescence characterized by a number of biological, social, developmental, and behaviour factors, young people need to be understood in order that their needs could be met. Although always lumped together as young people, the group is very diversified in terms of age, gender roles, marital status, socio-economic status and experiences. One group, which has received little attention in the literature in Ghana are those living in urban slums. The view is that their location may expose them to different challenges and experiences in health, education and general well being. Using the Health Belief Model, the study investigates factors influencing perception of risk of HIV among adolescents living in an urban slum in Ghana. Data was obtained from 902 adolescents aged 10-19 years living in Kwesimintsim zongo, an urban slum in the Western region of Ghana. A multi-staged sampling technique was used to select the respondents. Their perception of risk of HIV was generally low and was predicted by age, ethnicity, membership of social group and exposure to the print media. Adolescents who were exposed to the print media were 2.0 times more likely to perceive themselves to be at tisk of HIV compared to those who were not. This low risk perception might cause adolescents to engage in behaviours, which are likely to endanger their health in general, and reproductive health in particular. The slum is located in the major city in the area where oil has been discovered in Ghana. Thus there is potential for behaviours which could put them at risk of adverse reproductive health outcomes. Considering the effects of HIV and AIDS on young people, it is imperative to put in place campaigns that would help to increase their perceived risks toward HIV. The factors, which affect adolescents

risk perception, should be taken into consideration in designing HIV and AIDS campaigns to ensure positive behavioural change.

Introduction

Globally, 34.0 million [31.4 million–35.9 million] people were living with HIV at the end of 2011[1]. Sub-Saharan Africa remains most severely affected, with nearly 1 in every 20 adults (4.9%) living with HIV and accounting for 69% of the people living with HIV worldwide. The regional prevalence of HIV infection is nearly 25 times higher in sub-Saharan Africa than in Asia. The 2012 HIV/AIDS sentinel survey report puts median prevalence for Ghana at 2.1% [2], with HIV been described as a generalised epidemic [2]. Over 80% of all infections are transmitted through sexual intercourse [2]. Estimates put prevalence among young people aged 15 – 19 years at 0.70% and those aged 15-24 (a population who are used as proxy for new infection) at 1.3% in 2012. Also, prevalence in urban areas (2.8%) is higher than that of rural areas (2.6%) [2]. This epidemic is fuelled by sexual risk-taking behaviours, as in many parts of sub-Sahara Africa. Owing to a number of biological, social, developmental, and behaviour factors, youth are disproportionately affected by STIs including HIV/AIDS [3]. This situation calls for more attention to understand their risk perception and determinants of this risk perception as a way of contributing to the discourse on HIV and young people in urban slums in Ghana.

Although young people are aware of the risks of HIV transmission associated with unprotected sexual intercourse [4], studies have established that they have a low risk perception of contracting the virus [5]. Further, perception of sexual and reproductive health risk has not been consistent with knowledge in a number of studies [6]. Gender differentials have been noted in perception of HIV risk among adolescents. For instance, Akwara et. al., [7] established that males had a higher risk perception than females while others have shown the reverse [8-11]. Studies have also, identified other correlates of HIV

risk perception. For instance, a study in the slums of Nairobi, observed a relationship between schooling and HIV risk perception with young people in school living in slums being less likely to perceive themselves at risk of HIV infections [12].

The focus of the paper is to examine perception of risk of HIV infection among young people (10-19 years) in a slum area in Ghana. This is an area where oil has been discovered, creating a magnet for the migration of young people for work, some of whom are likely to end up in the slum area. Therefore understanding their perception of risk can feed into education programmes.

Conceptual Framework

The Health Belief Model (HBM) was developed to study health-seeking behaviour in the United States in 1950. It hypothesises that health related actions depend upon the concurrent occurrence of three factors: the existence of sufficient motivation to make health salient; the belief of a perceived threat to health; and the belief that following a particular health recommendation would be beneficial in reducing a perceived threat [13-15].

The key variables of the HBM include: perceived susceptibility of an individual to a health problem, perceived severity of the problem, perceived threat, perceived benefits of strategies, perceived barriers to effective action, and cues to action (see Figure 1). Other variables used in the model are socio-demographic such as age, education, sex, ethnicity and self-efficacy [16-17]. Variations to the model have emerged after the initial conceptualisation, including the social learning theory [18-19] later re-named as Social Cognitive Theory, the Theory of Reasoned Action [20] the Theory of Planned Behaviour [21]

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and the Interactional Framework [22-23].

One of the strengths of the HBM is that it has direct implications for intervention designs. Also, the model provides for identifying all characteristics and the beliefs of the population under study which allow for the development of targeted interventions [24]. Also, it makes testable predictions such as large threats might be offset by perceived costs whilst small threats might attract large benefits.

The model has been criticised because researches that have used the model have included only selected components of the model thereby not testing the whole model [25]. Secondly, as a psychological model it does not take into consideration factors such as environmental or economic factors that influence health behaviour.

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Methods

Primary data was collected from young people 10-19 living in Kwesimintsim zongo – a slum community in Takoradi, the regional capital of the Western region of Ghana. The area was purposively selected due to its location in the major city in the area where oil has been discovered in Ghana which has a potential for behaviours which could put young people at risk of adverse reproductive health outcomes. The estimated population for the Kwesimintsim Zongo was 10775 in 2010 (GSS, n.d.). The thpopulation of adolescents' was estimated at about 2155 based on the national average 20 percent population in that age group. Participants in the survey signed informed consent forms and were assured of anonymity and confidentiality. For those below 18

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years, consent was sought from a responsible adult in their lives (parents, other relatives or any adult-figure)

Using a multi-staged sampling technique, a total of 902 (424 males and 478 females) adolescents living in the community were used for the study. The community was zoned into 5 clusters for the 2010 Population and Housing Census. In all there were a total of 15 Enumeration Areas (EAs) for the census. Using simple random sampling, a total of eight EAs were selected from the five clusters. Three EAs were selected from the cluster with six EAs, two were selected from the cluster with four EAs and one EA each of the three remaining clusters. Numbers were allocated to each EA, based on proportional allocation. Structures in each selected EA were listed. Using the EA bases as reference points, every 3rd structure/house was systematically selected in each cluster. After this the members in the households in the selected structures/houses were listed. Through that all adolescents 10-19 years living in the area were identified and this constituted the sampling frame for the study. Simple random sampling was then used to select households with adolescents for the study. In situations where there were more than one adolescent in the household, the person whose name was mentioned first was chosen to respond to the questionnaire.

A questionnaire adapted from various sources was used for the data collection. The rationale was to ensure that the variables used conformed to standardised meaning and measurements. Ten trained field assistants (mainly graduate students) collected data for the research over a period of two weeks (15th – 29th May, 2011).

Data processing including data entry and cleaning was done using the Statistical

Product for Service Solutions (SPSS) version 15. The management and analysis were done using STATA version 12. Simple bivariate tables were used to present the data to show the relationship between the variables and three sequential logistic regression models were used to examine the predictors of perception of risk of HIV. The outcome variables were coded No=0 and Yes=1. The explanatory variables used for the logistic regression were background factors – age, sex, level of education, place of origin, ethnicity and religion; contextual factors – co-residence with adult figures, member of social groups and involvement in economic activities in the last 7 days and exposure to mass media channels. Model I featured background factors such as age, sex, level of education, place of origin, ethnicity and religion. In model II, three contextual factors – co residence with adult figures, member of social groups and involvement in economic activities in the last 7 days were added to the variables in model 1 to estimate their effect on perception of risk among adolescents. The final model consisted of the variables used in in models I and II plus exposure to mass media channels.

Results

Background characteristics of adolescents

Of the 902 interviewed, 47% were males and the rest females. The mean age of the respondents was 14.4 years (14.4 years and females, 14.3 years). Contrary to perception of urban living, 98% of both male and female adolescents had had formal education with the highest education being the attainment of tertiary education among 1.5% of males and 1.2% of females aged 15-19 years. Forty-two percent of the males and 44% of the females had completed primary school education and 36% and 33% males and females respectively had completing junior high school (basic education in Ghana). (Table 1). Thus the young people appeared to be better educated than the average in the

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country.

>>>>>>>>>>>>> insert Table 1 here >>>>>>>>>>>>>>>>>>>>>>>>>

The suffix to the names of the settlement, zongo – connotes an enclave for settlers from the northern part of the country, Burkina Faso and Mali in a predominately Akan speaking area. Among the respondents 41% and 32% males and females respectively were Fantis, Ashanti (15% males and 20% females) and Mole-Dagbani (19 % males and 17% females). There were variations in the ethnicity between the older and younger adolescents (see Table 1). The relatively high concentration of Mole-Dagbani in the area is indicative of the origin of the settlement.

Eight out of 10 respondents reported being Christians with the Pentecostals/Charismatic Christians dominating (43.4%) and 20% were Protestants (19.1% males and 21.3% females). Sixteen percent of the adolescents interviewed were Muslims (15.6% males and 16.3 % females). Only 0.2% of males and 2.3% of females had ever married. The few who were married were females aged 15-19 years.

To measure perception of HIV risk, respondents were asked if they felt they were at risk of getting infected with HIV and what they were doing to avoid the risk. The intention was to explore their understanding of risk which could potentially influence their risk-taking behaviour. Generally their perception of risk of HIV infection was low among the adolescents. For instance, 15% of females and 16% of males perceived themselves at risk of HIV. The main reason cited by those who perceived themselves at risk was that they were sexually active (70 % males and 59% of the older adolescents)

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(data not shown). Among those who did not consider themselves to be at risk, 57% of females and 47% of males indicated that they were abstaining from sex. Another 12% females and 20% of the males indicating that they were using condoms as way of reducing their risk of contracting HIV (data not shown).

Multivariate analysis

Three sequential logistic regression models were used to establish the relationship between the explanatory variables such as socio-demographic characteristics, economic activities, living arrangements, membership of social groups and exposure to mass media channels and the outcome variables – perception of risk of HIV. Model I, controlled for the effects of economic activities, living arrangement, membership of social groups and exposure to mass media channels. The sequential regression was employed to determine the factors that significantly predict perception of risk of contracting HIV among adolescents. The results are presented in Table 2.

The pseudo R2 value for model I was 0.0790. It increased steadily with each succeeding model. Overall, model II which consists of background and contextual factors emerged as the best predictor of perception of risk of contracting HIV among adolescents in Kwesimintsim. The variables that come out significantly under this model were age, ethnicity and membership of social groups.

>>>>>>>>>>>>>> Insert Table 2 here >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

The results suggest that older adolescents were more likely to consider themselves at risk

of contracting HIV compared to the reference (OR=1.8, p<0.05). The likelihood of perception of risk of HIV varied by ethnicity. For instance, Ewes were more likely to perceive themselves at risk of HIV than the reference (Ga-Adangbe) (OR=8.9, p<0.05). In the case of membership of social group, it was observed that adolescents' who were members of these groups were more likely to perceive the risk of HIV compared to those who did not belong to any groups (OR= 1.6, p<.0.05) (see Table 2).

There was a significant relationship between exposure to mass media channels and perception of risk of HIV although this varied by type of channel (Model III). For instance, adolescents exposed to the print media were more likely to perceive themselves to be at risk of HIV infection compared to those with no exposure (OR=2.0, p<0.001).

Discussion

Using the Health Belief Model, the paper sought to examine the correlates of perception of risk of HIV among adolescents living in an urban slum in Ghana. There were significant relationships between socio-demographic factors such as age, sex, ethnicity; membership of social groups and exposure to print media and perception of risk of HIV infections among adolescents. .

The study observed low perception of risk of HIV among adolescents. This finding is consistent with findings of other studies [11, 26, 27, 28]. This finding, however, is inconsistent with those of Adedimeji [5] who found 58 per cent of males and 36 percent of females perceiving HIV risks. This low risk perception could be due to the fact that more than two thirds of the respondents were not sexually active and also because adolescents vulnerability to HIV infection was low [28].

Studies have established gender disparities in sexual and reproductive health risk with some reporting higher risk perceptions among males [5,7] and others females [8-11]. Gender disparities in HIV risk perception were observed with more males (16%) than females (15%) reporting HIV risk. This finding is consistent with studies by Adedimeji [5] and Akwara et. al., [7] that higher risk perception exists among males than females. The high perception of risk of HIV could be as the result of the fact that more males were involved in sexual intercourse than females (results not shown). Also, the socio-cultural values of the area are seemingly liberal when it comes sexual behaviour of males

Different socio-demographic factors accounted for adolescents risk perception. For instance, older adolescents were about 1.8 times more likely to consider themselves at risk of contracting HIV compared to the reference. The higher risk perception among adolescents could be as a result of their level of sexual activity. This finding corroborates that of Adedimeji, et. al., [4] who found in their study Nigeria that older adolescents had a higher risk perception than their younger counterpart [4]. Ewes were more likely to perceive themselves at risk of HIV than the reference category (Ga-Adangbe). There is the need to undertake further studies to explore this relationship because no plausible explanation comes to mind immediately. It was observed that adolescents who were members of social groups were more likely to perceive the risk of HIV compared to those who did not belong to any group. This relationship could be as a result of some positive influences from these groups. Adolescents exposed to the print media were more likely to perceive themselves to be at risk of HIV infection compared to those with no exposure.

This study is limited by its cross-sectional nature and hence causal inferences cannot be made. Despite the above limitation, the study has some strength. First, the large

sample size gave the study sufficient power. Also, the representativeness of the sample enhances the study's generalisability to other locations.

Conclusion

The study investigated factors influencing perception of risk of HIV among adolescents living in an urban slum in Ghana using the Health Belief Model. The perception of risk of HIV among adolescents was generally low. The low risk perception was predicted by some socio-demographic variables including age, ethnicity, membership of social group and exposure to the print media. It is imperative to put in place campaigns, which would help to increase adolescents' perceived risks. This is because low risk perception might cause adolescents to engage in behaviours that are likely to endanger their health in general and reproductive health in particular. The factors, which affect adolescents risk perception, should be taken into consideration in designing the campaigns to ensure positive behavioural change.

Authors' contributions

EKMD conceived the study, conducted data analysis and interpretation and drafted the

first version of the manuscript. EKMD, AKK and KAA revised the manuscript for important intellectual content and gave consent for the version to be published. All authors have read and approved the final manuscript.

Competing interest

The authors declare none.

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Table 1 Socio-demographic Background of Respondents

Variables	Sex

	Males			Females		
	10-14	15-19	Total	10-14	15-19	Total
Highest level of education						
No education	0.00	2.4	1.2	0.8	1.4	1.1
Primary	71.4	11.3	42.4	71.8	9.7	43.7
Junior High School	27.3	45.6	36.1	27.4	38.9	32.6
Senior High School	1.3	39.2	19.6	0.0	48.6	22.0
Tertiary	0.0	1.5	0.7	0.0	1.4	0.6
Ethnicity						
Fante	37.7	45.1	41.3	34.0	30.1	32.2
Ashante	16.4	12.8	14.6	19.1	21.3	20.1
Ewe	5.9	3.4	4.7	6.1	7.9	6.9
Ga-Adangbe	2.3	4.4	3.3	4.6	3.2	4.0
Nzema	7.3	5.4	6.4	5.0	6.5	5.7
Ahanta	7.7	7.8	7.8	11.8	10.2	11.1
Mole-Dagbani	20.4	18.1	19.3	17.2	17.1	17.1
Non-Ghanaian	2.3	3.0	2.6	2.2	3.7	2.9
Religious Affiliation						
Catholic	13.6	9.8	11.8	12.2	9.3	11.0
Protestant	16.4	22.1	19.1	21.4	21.3	21.3
Pentecost/Charismatic	46.8	42.6	44.8	38.6	46.3	42.0
Other Christians	8.2	4.9	6.6	7.6	9.3	8.4
Muslims	14.1	17.2	15.6	19.1	12.9	16.3

Others	0.9	3.4	2.1	1.1	0.9	1.0
Marital Status						
Married	0.0	0.5	0.2	0.0	5.1	2.3
Not married	100.0	99.5	99.8	100.0	94.9	97.7
Risk of contracting HIV						
Yes	11.1	20.8	15.5	7.7	26.0	16.5
No	88.9	79.2	84.5	92.3	74.0	83.5

Table 2: Logistic regression analysis of perception of risk of HIV

Variables	Model I Odds Ratio	Model II Odds Ratio	Model III Odds Ratio
Sex of Respondents			
Females (Ref)			
Males	1.07	1.051	1.08
Age of Respondents			
10-14	Ref		
15-19	1.84**	1.65*	1.69**
Level of Education			
No education (Ref)			
Primary	0.62	0.59	0.29
Junior High/Middle	1.31	1.28	0.58
Secondary/Higher	1.45	1.43	0.59
Place of origin			
Village (Ref)			
Town	0.59	0.59	0.55
City	1.03	1.06	0.96
Religion			
No religion (Ref)			
Catholic	0.54	0.52	0.47
Protestants	0.86	0.81	0.73
Charismatic/Pentecostal	0.69	0.68	0.61

Other Christians	0.83	0.77	0.67
Muslims	0.58	0.58	0.48
Ethnicity			
Ga-Adangbe (Ref)			
Fanti	4.30**	4.34**	4.86**
Ewe	8.91**	9.32**	9.85**
Nzema	6.65**	7.08**	7.89**
Ahanta	8.71**	8.71**	9.59***
Mole-Dagbani	7.25**	7.52**	9.35***
Co-residence with biological parent			
No (Ref)			
Yes	-	0.88	0.86
Membership of social group			
No (Ref)			
Yes	-	1.58**	1.52*
Economic activity in last 7 days			
No (Ref)			
Yes	-	1.31	1.29
Exposure to mass media			
Radio			
No (Ref)			
Yes	-	-	0.70

Television			
No (Ref)			
Yes	-	-	1.54
Print – Newspaper/magazine			
No (Ref)			
Yes	-	-	2.02***
Pseudo R^2	0.0790	0.0848	0.1053
Prob > X^2	0.000	0.000	0.000

*p<0.10 **p<.05 ***p<.001   OR=Odds ratio; ref=reference