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Pitout JDD, Church DL, Gregson DB, Chow BL, McCracken M, Mulvey M, Laupland KB (2007). Molecular epidemiology of CTXM-producing *Escherichia coli* in the Calgary Health Region: emergence of CTX-M-15-producing isolates. *Antimicrob. Agents Chemother.* 51: 1281-1286.

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Full Length Research Paper

Magnitude of risky sexual behavior among high school adolescents in Ethiopia: A cross-sectional study

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Risky sexual behavior increases the likelihood of adverse sexual and reproductive health consequences such as unwanted pregnancies, unsafe abortion, and sexually transmitted infections (STIs) including (HIV/AIDS). Adolescents in sub-Saharan Africa including Ethiopia are highly exposed to various risky sexual behaviors. The aim of this study was to determine the magnitude of risky sexual behaviors among Boditti Secondary and Preparatory School adolescents. A school based cross-sectional study was conducted from March 9 to April 27, 2013 among a random sample of 508 students in Boditti Secondary and Preparatory School, Boditti town, Wolayta zone, South Ethiopia. Of 508 students surveyed, 29.1% (148); 95% confidence interval (CI) [25.2, 33.3] were sexually active. About 20.5% (104); 95%CI [17.9, 24.2] and 8.7% (44), 95%CI [6.4, 11.5] of the students had committed sex with more than one sexual partner in their life time and in six months prior to the survey, respectively. Concerning the frequency of condom use, 69%; 95%CI [59.0, 77.9] used condom with casual friends inconsistently or never. Overall, 17.9% (91); 95%CI [14.7, 21.5] were engaged in risky sexual practice for HIV. Peer pressure and need of money were the major reasons cited to have influenced adolescents' sexual activities. Student's age, living arrangement, previous HIV test experience and grade level were independent predictors of risky sexual behavior. Significant numbers of students were engaged in risky sexual behavior. Strengthening sexual education to the target groups could help reduce the consequences of risky sexual behaviors.

Key words: Magnitude, risky sexual behavior, high school, students.

INTRODUCTION

Adolescence is the time of transition from childhood to adulthood during which young people experience changes following puberty (Seme and Wirtu, 2008). The common risky sexual practices in this age group include early sexual intercourse, multiple sexual partners,

unprotected sexual intercourse, engaging in sex with older partners and non-regular partners such as commercial sex workers (Dingeta et al., 2012). Risky behaviors such as consumption of alcohol cigarette smoking or the use of illicit drugs by adolescents have been shown to be

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associated with increased risk of sexual intercourse, multiple sexual partners and lower rates of condom use (Dingeta et al., 2012).

Several factors are involved in the process of the decision for sexual experimentation among youth. Sensation seeking, impulsivity, curiosity, use of substance such as alcohol, and lack of self-regulation seem to contribute to the problem (Dingeta et al., 2012). Studies also suggested that adolescents have limited knowledge about sexual and reproductive health and know little about the natural process of puberty. This lack of knowledge about reproductive health may have serious consequences (Seme and Wirtu, 2008).

Approximately half of the new human immunodeficiency virus (HIV) infections globally occur in the age group 15 to 24 years (Dingeta et al., 2012). Many young people engage in risky sexual behaviors that can result in unintended health outcomes. Sexual risk behaviors place adolescent at risk for infection, sexually transmitted infections (STDs) and unintended pregnancy.

Early and unprotected sexual initiation can trigger harmful physical, emotional and social outcomes, especially for girls. Moreover, compared with adults, adolescents are less likely to have skills, cognitive maturity, and information needed to protect themselves from unwanted pregnancy, HIV and STIs (Dingeta et al., 2012).

According to the study conducted in among students in Agaro High School, 25% had history of sexual intercourse for the first coitus the mean age was 16.74 years. The average age for males and females were 16.45 and 16.8 years, respectively. Majority (55.6%) of those with previous sexual exposure had one partner and 35.6% had 2 to 5 partners and the remaining 8.8% students had more than 5 partners. (Girma et al., 2004).

According to a survey conducted According to a Nekemit High School, the magnitude of premarital sex stands at 21.5%. About 57.1% had their first sexual intercourse between the age of 15 and 17 years. The main motive for initiation of sexual intercourse were falling in love (33.8%), desire to practice sexual intercourse (30.3%), peer pressure (17.2%), and to get money or gifts (7.6%).

Also, the prevalence of premarital sexual practice in Addis Ababa was 39.8% for males and 5.6% for females. But, the national finding of the prevalence of premarital sex among high school adolescents was 19% (Lamesgin, 2013).

As reported in different studies, the condom use rate was very low 44.4% in Addis Ababa Ethiopia (Charrie and Berhane, 2012); 46.9% Agaro, Ethiopia (Girma et al., 2004), and 47.8% in Gondar, Ethiopia.

In Ethiopia, most STI related interventions including HIV/AIDS targeting the general populations do not spend on needs of students, because students are considered to have sufficient knowledge about HIV/AIDS and other reproductive health issues (Lamesgin 2013). Therefore, the aim of this study was to assess the magnitude of risky

sexual behavior among high school adolescents in Boditti Secondary and Preparatory School, Boditti, Southern, Ethiopia.

METHODS

A cross-sectional study was conducted to determine the magnitude of risky sexual behavior among high school adolescents in Boditti Secondary and Preparatory School in 2013. Boditti town is located in Southern Ethiopia at a distance of 370 km South of Addis Ababa and 132 km South of Hawassa which is the capital city of the Southern Nations, Nationalities and People's Region (SNNPR). Boditti town had one preparatory school. The town is divided by a high way running from Addis Ababa to Arbaminch (tourist destiny). Students with rural family residence, live away from their families in a rental house. Boditti high school had 5914 (3155 males and 2759 females) students.

A total sample size of 508 was estimated after fixing proportion of risky sexual behavior to be 50%, 95% confidence interval (CI), margin of error at 5% and none response rate at 15%.

A sampling frame which contained the lists of all 5914 students from 9 to 12 grades was developed based on the lists obtained from students' record office. Finally, 508 students were selected using a computer generated random numbers.

Data were collected using structured self-administered questionnaires prepared in the national language (Amharic). Appropriateness of the questionnaires was checked by conducting pretest on 5% of the sample. Students selected randomly from the list were asked to fill the questionnaires in the separate rooms during break time. Questionnaires were handed out to the students who consented to participate in the study. The study information sheet was attached with the questionnaires. Data collection was facilitated by trained supervisors. Data were collected after securing informed consent. Data were collected after securing informed consent.

The collected data were entered, cleaned and analyzed using SPSS version 18. Socio economic/demographic characteristics of the study participants and magnitude of risky sexual behavior were analyzed using frequency distribution. Risky sexual behavior was defined when a student has at least one of the following: student had sex without condom with causal partner, used condom irregularly with causal partner and had more than one sex partner in the past six months. Predictors of risky sexual behavior were analyzed using logistic regression model. Model goodness of fit test was checked using Hosmer-Lemeshow statistics. All variables which were significant at a p-value of 0.25 in the binary logistic regression model were fitted into the multiple logistic regression models. Variables which were significant at a p-value of 0.05 in the final model were retained as independent predictors of risky sexual behavior among students.

RESULTS

A total of 508 students participated in the study with 100% response rate. Among them 271 (53.3%) were males. About 71.7% of the study participants were between the ages of 15 and 19 years. Majority of the participants (51.4%) have attended their primary school at rural. Regarding living arrangement, 86.4% of the students were living with at least one family member, and the rest (13.6%) were living alone. Ninety three percent of the students were never married (Table 1).

Table 1. Socio-demographic characteristics of Boditti secondary and preparatory School, Boditti town, Wolayta Zone, SNNPRS, Ethiopia.

Characteristic	Frequency	Percentage
Age		
<15	57	11.2
15-19	364	71.7
20-30	87	17.1
Sex		
Male	271	53.4
Female	237	46.0
Religion		
Protestant	282	55.5
Orthodox	103	20.3
Muslim	18	3.5
Catholic	20	3.9
Others	85	16.7
Grade level		
9th	145	28.3
10th	156	30.9
11th	132	26
12th	75	14.8
Marital status		
Single	473	93.1
Married	26	5.1
Divorced	6	1.2
Widowed	3	0.6
Living arrangement		
With parents	439	86.4
Alone	69	13.6
Get pocket money		
Yes	397	78.2
No	111	21.9

Magnitude of risky sexual behavior

From the 508 respondents, 29.1% (148); 95%CI [25.2, 33.3] ever had sexual intercourse history of which 61.5% (91); 95%CI [53.1, 69.4] had risky sexual practice. Males account for 98 (66.2%) of those who ever had sex. Overall, 17.9% (91); 95%CI [14.7, 21.5] were engaged in risky sexual practice for HIV. From those who ever had sex, most have committed their first sex with students. while few students with their boy or girl friends. The mean age of their first sex partner was 16.8 and 20.4 years for males and females, respectively. The mean age at which they started sex was similar for both males and females

16.6 ± 2 years. The first sexual debut in majority of them was when they were grade 8 or 9, which is similar for both sexes.

Majority of male students committed their first sex for the purpose of trial 39.8% followed by peer pressure (26.5%), whereas 11 (22%) females committed sex as a means to generate money.

Among respondents, 27 (5.3%), 95%CI [3.5, 7.6] had sex three and more times in the last three months prior to the study, while 48 (48.5%) had sex one to two times during the last 3 months.

About 20.5%, 95%CI [17.9, 24.2] of the respondents who committed sex had sex with two and more sexual partners in their life time. In six months prior to the study, 8.7% (44), 95%CI [6.4, 11.5] study participants committed sex with more than one sexual partner.

Among the study participants, 7 (1.3%) and 26 (5.1%) were reported of committing anal and oral sex, respectively. Out of 148 respondents who had sex, only 67.6%, 95%CI [59.4, 75] used condom. Concerning the frequency of condom use, only 20.8%; 95%CI [13.5, 30.3] used condom with regular friends and 31%; 95%CI [22.1, 41] with casual friends always.

About 215 (42.3%) of the respondents were tested for HIV, while 12 (24%) of the female respondents who had sex were tested for pregnancy. Among 40 females who were never married and ever had sex, 16 (40%) had history of pregnancy. Of these, 9 (56.3%) had abortion at health institutions, 6 (37.5%) had abortion traditionally, while only one of them had given birth.

From the 148 respondents who ever had sex, 30 (20.3%), 16 (10.8%), 10 (6.8%), and 10 (6.8%) had genital discharge, itching sensation around the genitalia, genital sore and swelling following sexual intercourse.

Factors associated with risky sexual behavior

Associated factors with risky sexual behavior were determined by fitting different predictors into logistic regression model after checking model fitness using Hosmer-Lemeshow statistics.

The study showed the odds of risky sexual behavior is lower by 68% among female students than their male counterparts, AOR [95%]; 0.32 [0.2, 0.53]. The odds of risky sexual behavior increases with an increasing age. The odds of risky sex were significantly lower among preparatory level students compared to those in secondary school level (grades nine and ten). One of the independent predictor of risky sexual behavior is the student's living arrangement. Students who live alone compared to others who live with at least one family member do have significantly higher odds of risky sexual behavior, AOR [95%]; 2.0 [1.04, 3.9]. HIV test experience of the students was found to be associated with risky sexual behavior. The odds of being HIV tested was two times higher among students who had risky sexual behavior compared to those who had no risky sexual behavior

Table 2. Factors associated with risky sexual behavior among Boditi High School students.

Variable	Risky sexual behavior		COR [95% CI]	P-value	AOR [95% CI]
	Yes [n (%)]	No [n (%)]			
Sex					
Male	65 (24)	206 (76)	1.0		1.0
Female	26 (11)	211 (89)	0.4 [0.24, 0.6]	<0.001	0.32 [0.2, 0.53]
Age					
Below 15 years	4 (7)	53 (93)	1.0		1.0
15-19 years	68 (18.7)	296 (81)	3.0 [1.1, 8.7]	0.038	4.6 [1.5, 13.7]
20-30 ears	19 (21.8)	68 (78)	3.7 [1.2, 11.5]	0.024	5.5 [1.6, 18.3]
Schooling*					
Secondary(9 &10)	63 (20.9)	238 (79.1)	1.0		1.0
Preparatory (11 &12)	28 (13.5)	179 (86.5)	0.59 [0.4, 0.96]	0.034	0.3 [0.2, 0.6]
Living arrangement					
With parents	74 (16.9)	365 (83)	1.0		1.0
Alone	17 (24.6)	52 (75.4)	1.6 [0.88, 2.9]	0.120	2.0 [1.04, 3.9]
HIV tested					
Yes	45 (20.9)	170 (79.1)	1.4 [0.90, 2.2]	0.130	2.2 [1.3, 3.6]
No	46 (15.7)	247 (84.3)	1.0		1.0
Get monthly pocket money					
Yes	69 (17.4)	328 (82.6)	1.0		1.0
No	22 (19.8)	89 (80.2)	1.18 [0.69, 2.0]	0.56	1.2 [0.68, 2.13]
Known risk of unsafe sex					
Yes	84 (18)	379 (81.9)	1:00		1.0
No	7 (15.6)	38 (84.4)	0.83 [0.36, 1.9]	0.66	0.94 [0.38, 2.33]

*Secondary (grades 9 and 10), preparatory (grades 11 and 12).

AOR [95%]; 2.2[1.3, 3.6]. However, in this study knowledge on the risk of unsafe sex and getting monthly pocket money did not show statistically significant association (Table 2).

DISCUSSION

According to this study, 148 (29.1%) of the respondents had committed sexual intercourse, of which 91 (61.5%) had risky sex. The prevalence of risky sexual behavior stands at 17.9% among the study participants. This verifies that there is slightly high prevalence of sexual intercourse when compared with a study conducted among Agaro High School adolescents, which was 25%, of these 32.6% were males (Girma et al., 2014). This higher prevalence might be due to time difference between the two studies. There is higher accessibility of romantic and pornographic films as well as wide spread

use of mobile phones nowadays.

The prevalence of premarital sex 22.2% (29.5% for males and 13.9% for females) was found to be comparable to the national finding (19%) and 39.8% for males and 5.6% for females. From another study males were more likely to be engaged in sexual activities (Siyon et al., 2010).

The mean age at first sex was 16.6 years among the study participants. This indicates that onset of sexual practice is comparable with prior study conducted among Nekemte High School adolescents which is 16.2±1.5 years for males and 15.2±1.7 years for females (Seme and Wirtu, 2008). But it is earlier when compared with prior study conducted in other countries. Also, the mean age at which a teen lost his/her virginity was 17.13 years in 2002 and 17.14 years in 2006 for girls and 18.06 for boys in Britain (Wikipedia, 2013). The reason for high prevalence of premarital sex in our case might be due to low open discussion between parents and children about

sexual matters, and for need of money.

In this study more male adolescents than females were sexually experienced, but in Burkinafaso and Ghana adolescents, more females than males, while in Malawi and Uganda more males than females were sexually experienced (Nyovani et al., 2007).

The major reasons cited to have first sexual intercourse were desire to experiment (35.1%), peer pressure (23.6%), preparation for marriage (17.6%) and need of money (16.2%), when compared with a survey conducted in Nekemte High School adolescents, which shows 30.3% for desire to experiment, 17.2% for peer pressure and 7.6% for need of money (Seme and Wirtu, 2008).

From individuals who had sex in our study, 75.7% were sexually active in the three months prior to the study, where as 41.8% were reported to be sexually active three months prior to the survey in high school students of South Carolina (Simply Stated, 2012).

In case of our survey, 70.3% of the respondents who committed sex had more than one sexual partner. But according to the study conducted among Agaro High School students, 55.6% with previous sexual exposure had one sexual partner and 44.4% of them had two and more sexual partners (Lamesgin, 2013). However, in the survey conducted in Nekemte High School adolescents, 34.5% have two or more sexual partners in 12 months prior to the survey (Seme and Wirtu, 2008). This might be because of long time difference (e.g., the research done at Agaro was conducted in 2004) between the two studies.

The condom use rate was 67.6% in our study which was higher when compared with Agaro High School study (46.9%) and out of school youth in Hawassa town (27.6%). Also, this is higher when compared with study conducted in Gondar College of Medical Sciences students (47.8%) (Kitaw and Worku, 2002).

In our study, students who live alone had two times [AOR=2.0] higher odds of being engaged into risky sexual behavior than those who live with parents. This could be due to lack of opportunity for parental monitoring and guidance. Those students whose parents live in rural areas often attend their education in rental house in urban place. This living arrangement provides the opportunity of being free from parental supervision so that the students will have freedom of exercising sexual issues.

Cognizant of the potential effect on the validity of the study pertaining to the sensitive nature of the study objective, data were collected using self-administered questionnaire. This attempt however might not totally avoid social desirability bias. The scope of our study (limited to school students) limits its generalizability to out-school youths.

In conclusion, this study showed high magnitude of risky sexual behavior. Peer pressure and need of money were the major reasons for involvement into risky sexual practice. Student's living arrangement, sex, age and HIV test practice were significantly associated with risky sexual behavior.

RECOMMENDATION

Effective sexuality education could help lighten the problem. There is also a need to conduct community based behavioral survey.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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Full Length Research Paper

Prevalence, associated risk factors and consequences of premarital sex among female students in Aletawondo High School, Sidama Zone, Ethiopia

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Youth age is the period when majority of youths become sexually active. However, majority of the youths lack sufficient knowledge about (HIV/AIDS) and other reproductive health issues. As a result, youths have multitude of reproductive problems, including HIV, other sexually transmitted infections (STIs), unwanted pregnancy, induced abortion and dropping out of school due to unwanted pregnancy. The objective of this study was to assess the prevalence, associated risk factors and consequences of premarital sex among high school female students in Aletawondo town, Southern Ethiopia 2013. A cross-sectional school-based study was conducted using a facilitator guided self administered questionnaire. Study participants were female students attending regular school classes in high schools. The percentage of youths involved in pre-marital sex and those affected by its consequence were computed. Factors associated with pre-marital sex were assessed using bivariate and multivariable logistic regression. Among the total participants (n = 413), 394 were never married. Of the 394 never married study participants, 72 (18.3%) have in premarital sex. Of these, 11 (15.3%) had unwanted pregnancy and 82% had terminated their pregnancy (induced abortion). Predictors of premarital sex were: age [AOR (95% CI) = 1.43 (1.15, 1.77)], rural family residence [AOR (95% CI) = 2.12 (1.09, 4.12)], having a boy friend [AOR (95% CI) = 4.15 (2.34, 7.36)], going to night club [AOR (95% CI) = 2.92 (1.12, 7.65)]. Significant number of girls started having premarital sex due to various factors at different levels. Therefore, comprehensive sexual education at their earlier age could help reduce the consequences of pre-marital sexual intercourse.

Key words: Premarital sex, consequences, high school, female students.

INTRODUCTION

Adolescence and youth (ages 15 to 24) is the time when majority of youths become sexually active; however,

majority of them lack sufficient knowledge about human immunodeficiency virus (HIV) transmission (Population

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Reference Bureau, 2013). As a result, youths have multitude of reproductive problems, including HIV, other STIs, unwanted pregnancy, induced abortion and dropping out of school (Tamire and Enqueselassie, 2007; WHO, 2012a). This unwanted early pregnancy is associated with increased maternal and neonatal morbidity and mortality (WHO, 2012b). Lack of access to sexual education and contraceptives is reported to be the key issue contributing to the reproductive health problems faced by youths (WHO, 2012a). About 5% of never married women in Ethiopia have had premarital sexual intercourse and 5% have had sexual intercourse within the prior one year (Central Statistical Agency, 2012).

Youths tend to be sexually active and have more sexual partners, thus putting them at greater risk of having HIV infection and unwanted pregnancy. This in turn is associated with increased maternal morbidity and mortality due to attempts for induced abortion. Moreover, due to the fact that majority of higher education students and high school students are economically insecure, they are susceptible to economic incentives that can lead to higher risk sexual practices (Lamesgin, 2013).

Previous studies in Ethiopia among students indicated that from 14 to 23.4% of female adolescents had premarital sexual intercourse (Oljira et al., 2012; Ahmed et al., 2012; Seme and Wirtu, 2008). The first sexual practices in Ethiopia are often unplanned (Mazengia and Worku 2009), increasing young peoples' risk of having HIV and other STIs. Prevalence of HIV among female youths ranges from 0.2 to 9% in the country by region (Central Statistical Agency, 2012).

Pre-marital sexual intercourse is more common among the following group of adolescents: those whose parents live in urban areas, those who receive higher pocket money per month, those who perceive low self-educational rank and those who live in rented houses (Central Statistical Agency, 2012; Oljira et al., 2012). Early sexual intercourse is also associated with chat chewing, watching pornographic movies below 18 years, living away from parents and having boyfriends (Seme and Wirtu, 2008; Mazengia and Worku, 2009). It was also reported that in Ethiopia risk of women having HIV infection is particularly exacerbated by early sexual debut, lack of comprehensive HIV/AIDS knowledge and lack of access to health care services (Lamesgin, 2013). The young age of students, long periods of physical stay in the educational environment and emotional contacts within school communities are reported to increase the collective vulnerability of these communities to HIV/AIDS (Federal ministry of Health, 2004).

In Ethiopia, most HIV related interventions targeting the general public do not respond to the needs of students, because they are considered to have adequate knowledge about HIV/AIDS and other reproductive health issues (Lamesgin, 2013). So the aim of this study is to assess the prevalence, associated risk factors and consequences of premarital sex among high school female

students in Aletawondo town, Southern Ethiopia.

METHODOLOGY

A cross-sectional school based study was conducted to determine prevalence, associated risk factors and consequences of premarital sex among female students in Aletawondo High School in 2012. Aletawondo town is located in Southern Ethiopia, at a distance of 337 km South of Addis Ababa and 64 km South of Hawassa (the capital of the region). The town had only one high school. As a result, students, whose parents reside in rural areas, live away from their parents in rented houses alone or with other peers in the town. In 2013, Aletawondo High School had 2004 female students in grades ranging from 9-12.

A sample size of 420 was estimated after fixing proportion of premarital sexual practice to be 50%, 95% CI; margin of error, 5% and none response rate, 10%. A sampling frame which contained the lists of all 2004 female students from grades 9 to 12 was developed based on the lists obtained from students' record office. Eventually, 420 students were selected using a computer generated random numbers. Data were collected using structured self-administered questionnaires prepared in the official language (Amharic). Suitability of the questionnaires was checked by conducting pretest on 5% of the study participants. Students selected randomly from the list were asked to fill the questionnaires in separate rooms during break period. Questionnaires were handed out to the students who consented to participate in the study. The study information sheet was attached with the questionnaires. Data collection was facilitated by trained supervisors. Data were collected after securing informed consent.

The collected data were entered, cleaned and analyzed using Statistical Package for Social Sciences (SPSS) version 20. Socio-economic characteristics of the study participants, magnitude and consequences of premarital sex were analyzed using frequency distribution. Predictors of premarital sex were analyzed using logistic regression model after checking major assumptions for goodness of fit test (Hosmer and Lemeshow test), outliers and interaction between independent variables. All variables which were significant at a p-value of 0.3 in the binary logistic regression model (crude) were fitted into the final multiple logistic regression model. Predictors significant at a p-value of 0.05 in the multiple logistic regression models were retained as independent predictors of premarital sex among female students.

RESULTS

Characteristics of study respondents

A total of 413 female students were included in the study with a response rate of 98.3%. The mean age of the respondents was 16.4 ± 1.38 years. A large majority of study participants (95%) were never married. Regarding residence, higher proportion of the study participants (81%) were from urban areas.

By religious affiliation, majority of the respondents (66%) were protestants, and about one fifth (21%) were orthodox. Muslims accounted for 3% of study participants. By ethnic composition, about three-fourth of respondents (79%) belong to the Sidama ethnic group, followed by Amhara (9%).

Respondents' fathers and mothers who completed

primary school and above were about 68 and 55.7%, respectively. Majority of the study participants' fathers were farmers (44%) and mothers were house wives (60%). More than two-thirds of the study participants do not get pocket money. Regarding living arrangement of the study participants, 59, 10 and 5% live with both parents friends (peers) and alone, respectively. Regarding having a boy friend, 68.8% of unmarried female students had no boy friend at the time of this survey (Table 1).

Prevalence and consequence of premarital sexual intercourse

Among 394 female students who were never married, 72 (18.3%) had premarital sexual intercourse. And 51.4% of the students who had premarital sexual intercourse did so without condom. The prevalence of premarital sexual intercourse was higher among grade 9 students, with magnitude of 83 (32.4%). When the relationship of the study population to their sexual practices was examined, about 37 (51.4%) of the study participants who had premarital sex had no boyfriends. The main reasons for having sexual intercourse were lack of confidence to refuse 26 (6.6%), peer-pressure 14 (3.6%), desire to practice sexual intercourse and falling in love 10 (2.5%), money 7 (1.8%) and rape 4 (1%).

Out of those who had premarital sexual intercourse, 15.3% of the women faced unwanted pregnancy and those with unwanted pregnancy, 82% had an induced abortion. Similarly, 19 (20.9%) reported symptoms of sexually transmitted disease such as vaginal discharge 13 (14.3%), genital ulcer 5 (5.5%) and inguinal swelling 1 (1.1%). Of 19 students with symptoms of sexually transmitted disease, 68% had vaginal discharge (Figure 1).

Magnitude of premarital sex was higher among students whose residence is in rural areas compared to their counterparts from urban areas (Figure 2).

Factors associated with premarital sex

Four predictors namely age of the respondents, having a boy friend, going to night clubs and family residence emerged as independent predictors of premarital sexual intercourse from the logistic regression analysis. Logistic regression analysis showed that the odds of premarital sex increased with an increase in age of the study participants. For every year, increase in the age of the study participants, the odds of premarital sexual intercourse increase by 33%; [AOR (95% CI) = 1.33 (1.05, 1.7)]. The odds of having a boyfriend was more than four times higher among unmarried female students who had premarital sexual intercourse than unmarried female students without premarital sexual intercourse experience [AOR (95% CI) = 4.15 (2.34, 7.36)].

Residence of parents was associated with premarital sexual intercourse, with lower odds of premarital sexual intercourse among students whose parents are in the urban area where the school is found [AOR (95% CI) = 0.41 (0.22, 0.79)]. Similarly, the odds of premarital sex was statistically significantly lower by 78% among female students who did visit night clubs [AOR (95% CI) = 0.22 (0.10, 0.45)] (Table 2).

DISCUSSION

The proportion of pre-marital sex among female high school students is consistent with similar studies conducted among high school or university students in Nekemite and elsewhere in Ethiopia (Ojjira et al., 2012; Seme and Wirtu, 2008; Molla et al., 2008). However, the notion of comparability between the Nekemite study (the zonal capital) where the proportion of female students with pre-marital sex was 21.1% and the magnitude in the current study (18.3%) should be cautiously interpreted as it appears that the latter study is more of rural in nature (Seme and Wirtu, 2008). As such, this study may corroborate with a previous study conducted in Ethiopia where there was no difference in the rate of having sex between urban and rural (Mazengia and Worku 2009). However, the pre-marital sex magnitude observed in our study is relatively much higher than the finding from a Malaysian study, conducted in 2006 (Lee et al. 2006).

Unprotected sexual intercourse was reported by more than 50% of female participants in this study. As a result, the magnitude of the negative consequences of premarital sex is much higher in this study. WHO attributes the high rate of pregnancy and its complications to lack of effective sexuality education (WHO 2012b). According to WHO, 24% of young women aged 15 to 24 years in developing regions have comprehensive and correct knowledge of HIV/AIDS (WHO 2012b). Other similar investigations have strengthened the link between reproductive health knowledge and premarital sex (Wong, 2012; Thin et al., 2013). As a result, dissemination of reliable SRH information among youths is emphasized by different authors.

The finding that significant proportion of study participants had unwanted pregnancy is supported by a study conducted among undergraduate students of Addis Ababa University, Ethiopia, where 73.5% had unwanted pregnancy and almost all were terminated through induced abortion (Tamire and Enqueselassie 2007). The higher prevalence rate of induced abortion reported in the Addis Ababa study compared to the current study could be related to differences in the study areas, where the former is mostly urban. However, the reason why proportion of unwanted pregnancy remains higher among undergraduate university students in the Addis Ababa where contraceptive methods are widely available compared to the current study conducted in a sub-urban

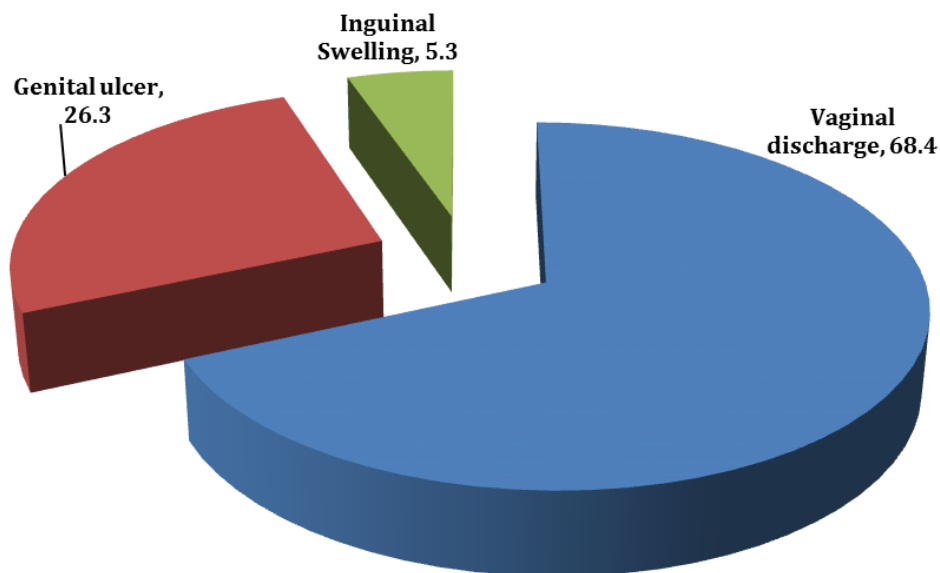
Table 1. Socio-demographic characteristics of the study participants.

Variable	Category	Frequency	Percent
Age	15-19	391	99.2
	20-24	3	0.8
Grade Level	9 th	250	60.5
	10 th	128	31
	Preparatory	35	8.5
Marital status	Single	394	95.4
	Married	19	4.6
Ethnicity	Sidama	325	78.7
	Amhara	39	9.4
	Oromo	24	5.8
	Guragae	11	2.7
	Others	14	3.4
Religion	Orthodox	86	20.8
	Protestant	273	66.1
	Muslim	13	3.1
	Others	41	9.9
Education level of Fathers	No formal education	58	14
	Read or/and write only	74	17.9
	Primary	96	23.2
	Secondary	93	22.5
	Tertiary	92	22.3
Maternal Education level	No formal education	69	16.7
	Read or/and write only	114	27.6
	Primary	91	22
	Secondary	73	17.7
	Tertiary	66	16
Students' residence	Urban	334	80.9
	Rural	79	19.1
Live with	Father	15	3.6
	Both	245	59.3
	Relative	40	9.7
	Friends	43	10.4
	Alone	22	5.3
	Other	10	2.4
Pocket money	Yes	138	33.4
	No	275	66.6
Fathers' occupation	Government employ	135	32.7
	Farmer	180	43.6
	Merchant	68	16.5
	Others	30	7.3

Table 2. Predictors of premarital sexual intercourse in Aleta Wondo Town.

Variable	Category	Premarital sex		COR 95% CI	AOR 95% CI	P-value
		Yes	No			
Students' residence	Urban	54	267	0.62 (0.34, 1.13)	0.78 (0.37, 1.65)	0.52
	Rural	18	55	1	1	
Pocket money	Yes	29	100	1.50 (0.88, 2.54)	1.43 (0.80, 2.6)	0.23
	No	43	222	1	1	
Having a boy friend	Yes	54	88	3.9 (2.39, 6.30)	4.15 (2.34, 7.36)*	0.00
	No	37	234	1	1	
Go to night club	Yes	53	296	1	1	0.00
	No	19	26	0.25 (0.13, 0.47)	0.22 (0.10, 0.45)*	
Live with parents	Yes	68	304	1.01 (0.33, 3.07)	1.43 (0.43, 4.74)	0.52
	No	4	18	1	1	
Age	15-25 years	72	322	1.2 (0.96, 1.43)	1.33 (1.05, 1.7)*	0.00
Family residence	Urban	30	191	0.49 (0.29, 0.82)	0.41 (0.22, 0.79)*	0.01
	Rural	42	131	1	1	
Mothers' education	Illiterate	36	138	0.75 (0.45, 1.25)	0.96 (0.49, 1.85)	0.90
	Primary/above	36	184	1	1	
Fathers' education	Illiterate	31	192	1.89 (1.12, 3.20)	1.71 (0.89, 3.30)	0.11
	Primary/Above	41	230	1	1	

*Statistically significant.

**Figure 1.** Symptoms of sexually transmitted infection among study participants (Aletawondo, 2013).

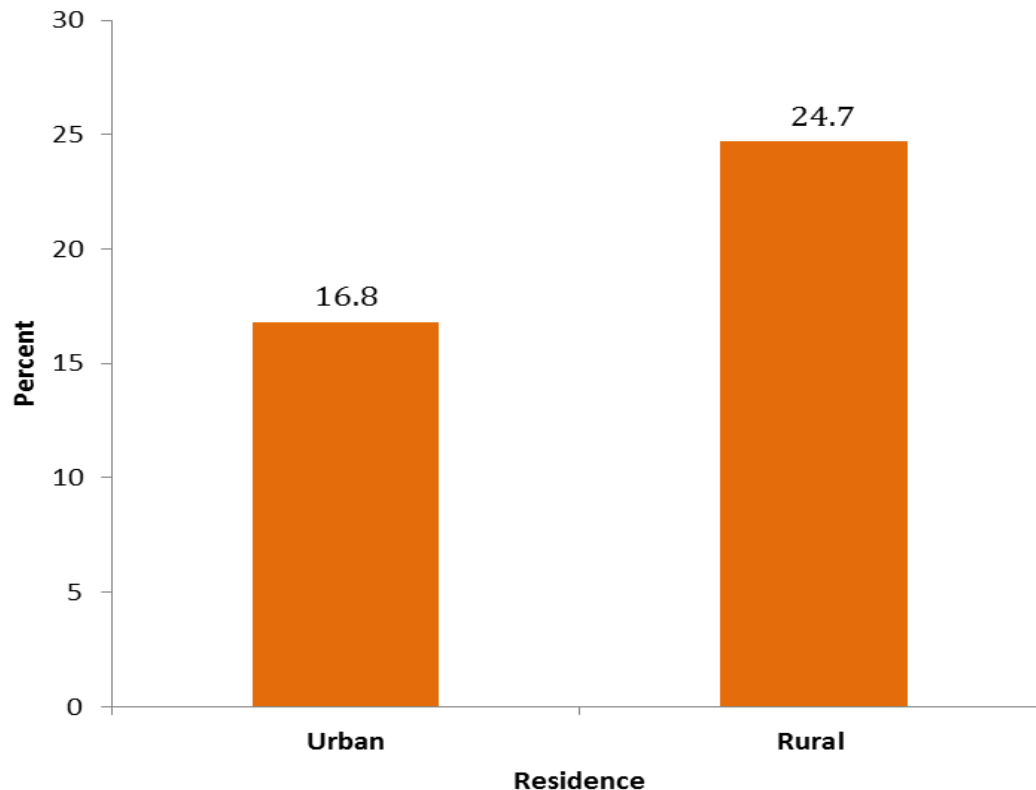


Figure 2. Magnitude of premarital sex by place of residence of study participants.
Source: Aletawondo (2013).

area among high school students with lower educational level is still a paradox. On the contrary, the influence of night clubs and peer pressure on pre-marital sexual encounter could explain the increased magnitude among the urban, like that observed in Addis Ababa.

The protective association between urban parental residence (where the school is found) and pre-marital sexual intercourse among female students could be due to the opportunity for parental monitoring and guidance. Those students whose parents live in rural areas often attend their education in rented houses in urban areas. This living arrangement provides the opportunity of being free from parental supervision so that the students will have freedom of exercising sexual issues. However, this finding is in contrast with the findings of other studies in Ethiopia (Oljira et al 2012).

Consistent with a study conducted elsewhere, the odds of pre-marital sex increased with increasing age (Khalaj et al. 2011; Gyan and Basel 2013). This finding is supported by the explanation that as age increases the exposure duration for predictors will increase.

In contrast with similar studies (Lee et al., 2006; Khalaj et al. 2011; Gyan and Basel 2013), the association between living with or away from parents and premarital sex was not statistically significant. This could be due to lower sample size for study participants who live away

from parents. As observed in similar studies conducted in Nekemte town, East of Wollega and Tehran (Seme and Wirtu 2008; Khalaj et al. 2011), having a boy friend is positively associated with premarital sex in this study. The likely reason is that as persons of opposite sex stay together during the time of fire age they will be sexually attracted and have sexual intercourse.

Consistent with many studies (Mazengia and Worku 2009; Gyan and Basel 2013), parental education (both mother and father) showed no statistically significant association with premarital sex in the current study.

Based on the potential effect of the validity of the study and its objective, data were collected using self-administered questionnaire. This attempt, however, might not totally avoid social desirability bias. The scope of our study (limited to school and female students) limits its generalizability to out-school youths and male youths.

CONCLUSION AND RECOMMENDATION

The study demonstrated that a significant number of female students are engaged in premarital sexual intercourse and suffer from its complications (unwanted pregnancy, abortion and STIs). Age of the student, having a boy friend, family rural residence and exposure to night

clubs were independent predictors of premarital sex. Thus, effective sexuality education that considers the identified predictors could help alleviate the problem. There is also a need to conduct more rigorous study that addresses out-school youths as well.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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Full Length Research Paper

Nightmares: Knowledge and attitudes in health care providers and nightmare sufferers

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Chronic nightmares have a prevalence of 3 to 8% in the general population, but they seem not to play a relevant role in the health care system despite the existence of evidence-based treatments. The aim of this study was to identify nightmare-related knowledge, attitudes and coping approaches in the German mental health care system. A total of 219 health-care providers (primary care, psychiatrists, psychotherapists, in-patient versus out-patient) and another 335 nightmare sufferers were interviewed by telephone and/or filled out self-rating questionnaires. They were asked to estimate nightmare prevalence, to specify nightmare causes and how they cope with nightmares. Health care providers were asked to estimate the relevance of nightmares and the need for treatment. All groups overestimated the prevalence of nightmares. Stress, traumatic events and inner conflicts were rated the highest regarding the possible causes of nightmares, with small differences between the groups. Only a minority of nightmare sufferers tried coping strategies on their own and rated them as being moderately helpful. About one third asked health care providers for help, mainly from general practitioners and medical specialists, but rated this a little helpful. Health care providers rated the relevance of nightmares and the need for treatment as being of moderate importance. Given the high prevalence of clinically relevant nightmares and the fact that helpful and efficient treatment approaches exist, all parts of the health care system as well as the nightmare sufferers need to be better informed. That may help to decrease nightmare disorders.

Key words: Nightmares, health care system, treatment, coping.

INTRODUCTION

Nightmares are defined as extremely frightening dreams and highly emotional experiences from which the dreamer wakes up directly. After awakening, the dreamer is oriented and can give a description of the dream and the emotion felt during the nightmare (DSM-IV-TR, American Psychiatric Association, 2000). The International Classification of Sleep Disorders (ICSD-2, American Academy of Sleep Medicine, 2005) gives a broader range of affective representations and defines

nightmares as dreams with strong negative emotions. Whether nightmares differ from “bad dreams”, which also cause negative effects but without awaking, has been discussed by several authors (Zadra and Donderi, 2000; Spormaker, 2008). There are specific typical themes in nightmares, such as falling, being chased, being paralyzed, being late and the death of someone close to the dreamer (Schredl, 2010). Nightmares are among the most frequent sleep disorders (Nielsen, 2011). Among

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young adults, 70 to 90% report having had nightmares in their childhood (Englehart and Hale, 1990). Nightmares are most prominent in children from five to ten years of age. In this age group, children report nightmares once a week (Schredl, 2009). In the general population about three to eight percent suffer from frequent nightmares (Bixler et al., 1979; Stepansky et al., 1998; Spoomaker et al., 2006). Prevalence rates in clinical populations are considerably higher (Ohayon et al., 1997; Taskanen et al., 2001; Krakow and Zadra, 2006). Women suffer from nightmares more frequently than men (Levin and Nielsen, 2007; Schredl and Reinhard, 2011) and nightmare rates decrease with age (Schredl, 2009; Schredl and Reinhard, 2011).

Even though nightmares are not a primary focus of psychotherapy or psychiatry, several evidence-based treatment approaches for nightmares have been adapted or developed over the past three decades (Spoomaker, 2008). The first nightmare-specific approaches were based on exposure (Burgess et al., 1998; Grandi et al., 2006) and systematic desensitization (Cellucci and Lawrence, 1978; Miller and DiPalato, 1983). While these approaches reduced nightmare symptoms, they were not well accepted by patients and are rarely used. A different approach, Imagery Rehearsal Therapy (Krakow et al., 1993; Krakow and Zadra, 2006) is aimed at changing the nightmare content using imagination and appears to be effective in patients with post-traumatic stress disorder (Forbes et al., 2001, 2003; Krakow et al., 2001a, b), as well in patients with idiopathic nightmares (Krakow et al., 1993; Germain and Nielsen, 2003; Thünker and Pietrowsky, 2012) and other comorbid disorders such as depression (Thünker and Pietrowsky, 2012). A related approach uses the ability of lucid dreaming to change the dream content (Spoomaker and van den Bout, 2006). No evidence could be found for non-specific treatments such as relaxation (Miller and DiPalato, 1983; Burgess et al., 1998), and there are no systematic studies of the effectiveness of education or general improvement of sleeping behavior.

A number of studies have shown that sleep disorders are related to psychological as well as physiological problems and have a negative effect on quality of life (Dement and Mitler, 1993; Léger, 2000; Stores, 2007), indicating that it is of considerable importance for health professionals to learn how to deal with sleep disorders using evidence-based treatment approaches. Dement and Mitler (1993) pointed out that over 80 million US Americans were suffering from serious sleep disorders, which remained untreated, calling for more attention concerning this problem in patient care. Léger (2000) concludes: "There seems to be a lack of understanding between practitioners and patients on the topic of insomnia." Only very few patients ask their doctors for help regarding sleep disorders. General practitioners seem to have only little knowledge about sleep disorders and their consequences, and appear not to be interested

in these problems (Meissner et al., 1998). Sleep disorders in general and nightmares in particular play only a very small role in medical studies and even in psychotherapy. In Germany, where the present study was carried out, we could find almost no information on nightmare treatment in text books for psychotherapists. This lack of knowledge may be the reason why non-organic sleep disorders are underdiagnosed or even misdiagnosed (Stores, 2007). There is very little awareness concerning the recognition of reasons and consequences of disturbed sleep (Haponiket al., 1996; Zozula et al., 2001). In primary patient care, night-mares may often be seen as secondary symptoms of other diseases. Based on the appearance of nightmares and the effectiveness of the therapeutic possibilities, it would be desirable for family doctors to know how to diagnose and treat nightmares (Aurora et al., 2010). According to Nielson and Zadra (2011) guidelines for the diagnosis and treatment of sleep disorders, including nightmares should be developed. Dreamers should be asked about their nightmares as well as their frequency, quality and contents as part of a regular procedure.

On the one hand, a significant number of patients appear to suffer from nightmares. Prevalence rates are higher in clinical populations, but patients without comorbid mental disorders are affected as well. Moreover, several effective nightmare-specific treatment approaches exist. On the other hand, health care professionals are largely unaware of these treatment approaches, and patients do not know where to look for help concerning their nightmares. Thus, we investigated the following questions: What do general practitioners, psychiatrists, psychotherapists, as well as patients know about nightmares? Are there any differences between health care providers in general and psychologists? Are there any differences between in-patient and out-patient care? What coping strategies do patients use, and which strategies do professionals advise their patients to use? Are these strategies helpful? How relevant do these groups consider nightmare disorders to be? In order to investigate these questions, mental health care professionals as well as nightmare sufferers were asked their opinion using telephone interviews and self-rating questionnaires.

METHODOLOGY

Participants

A total of 548 participants (health care providers and nightmare sufferers) were investigated. Health care providers in out-patient care included 69 general practitioners, 32 psychiatrists and 37 psychotherapists (psychologists). They were recruited from the Yellow Pages and contacted via telephone. Health care providers in in-patient care consisted of 81 medical practitioners and psychologists in psychiatric hospitals. Table 1 shows the overview of the sociodemographic data.

In addition, 335 nightmare sufferers were recruited from internet platforms (41= male; mean age: 28.7 years, standard deviation

Table 1. Sociodemographic data of health care providers (HPC), mean and standard deviation if not otherwise specified.

Care provider	N	Age	Sex (m:f)	Professional experiences (years)
General practitioners	69	53.8 ± 9.0	55:14	25.2 ± 8.8
Psychiatrists	32	51.8 ± 7.2	22:10	21.7 ± 8.8
Psychotherapists (Psychologists)	37	52.8 ± 11.1	16:21	22.7 ± 11.5
In-patient HPC	81	37.7 ± 9.4	29:52	8.7 ± 8.1

Table 2. Means and standard deviations of prevalence and relevance of nightmares and need for treatment.

Parameter	GP	PS	PT	IP	NS
Prevalence (mean, SD)	9.4 ± 9.4	22.6 ± 25.2	17.2 ± 13.9	19.5 ± 17.9	35.8 ± 25.7
Relevance of nightmares for patient care	2.4 ± 1.3	3.5 ± 1.8	3.7 ± 1.8	3.7 ± 1.3	-
Need for Treatment:	2.8 ± 1.4	3.6 ± 1.7	3.3 ± 1.7	3.9 ± 1.5	-

GP: General practitioner; PS: psychiatrist; PT: psychotherapist; IP: in-patient health care providers; NS: nightmare sufferers; prevalence = estimation of nightmare prevalence in the general population; relevance and need for treatment rated on 7-point-Likert-scales with 1 = minimum, 7 = maximum.

(SD)=11.5). On average, they had 12.2 (SD=16.2) nightmares per month and about one third reported further psychological problems, mainly depression (50%), anxiety (19%) and posttraumatic stress disorder (14%). Fifty six patients were taking psychoactive drugs, mainly antidepressants (N=45) and/or neuroleptics (N=14).

Procedure

Health care providers in out-patient care were interviewed on the telephone using semi-structured interviews. In-patient health care providers filled out a paper-and-pencil questionnaire. The nightmare sufferers filled out an online questionnaire.

The interviews and questionnaires were developed specifically for this study and consisted of three parts: questions concerning demographic data, knowledge about nightmares and awareness of coping strategies. The demographic data were assessed in each group. Nightmare sufferers also received questions concerning their mental health and nightmare symptoms. Knowledge about nightmares among health care providers was measured using questions concerning the prevalence of nightmares and their possible causes. All health care providers were asked whether or not they recommend coping strategies, which coping strategies they recommend, and whether they themselves would rate them as helpful. Patients were asked whether they tried coping strategies on their own, asked professionals for help and whether specific coping strategies had been recommended to them. Patients also rated coping strategies and coping recommendations with regard to their helpfulness. Health professionals were asked to give an estimation of the relevance of nightmares in patient care and need for treatment on a 7-point-Likert-scale.

Statistics

Univariate Analyses of Variance (ANOVAs) were conducted for the estimations of prevalence, relevance and need for treatment with "group" as between-subject factor (general practitioners, psychiatrists, psychotherapists, hospital medical practitioners, nightmare sufferers). If the ANOVAs were significant, post-hoc comparisons (Scheffé tests) were conducted for each pair of two groups. For non-parametric data, Kruskal-Wallis tests and Games-Howell procedures were performed, while for dichotomous

variables, χ^2 -squared tests were calculated. Pearson correlations were calculated to examine the relationship between nightmare prevalence, relevance of nightmares and need for treatment. The 0.05 level of significance was applied to all tests and effect sizes for the ANOVAs are reported as partial η^2 . All results are reported as means (\pm standard deviation), if not otherwise specified.

RESULTS

As variances for the estimation of nightmare prevalence were inhomogeneous (Levene test: $F(4,513) = 23.50, p < .05$), the Kruskal-Wallis test was applied to these results. Prevalence rates (in percent) differed significantly between groups ($\chi^2 = 99.11, df = 4, p < 0.001$), rated lowest by general practitioners (9.4 ± 9.4) and the highest by nightmare sufferers (35.8 ± 25.7). Post-hoc comparisons revealed that general practitioners differed significantly from both psychotherapists ($17.2 \pm 13.9, p < 0.05$) and in-patient professionals ($19.5 \pm 17.9, p < 0.05$). All professionals, with the exception of psychiatrists, differed from nightmare sufferers, who overestimated the prevalence of nightmares most ($p < 0.001$ in each case). Table 2 shows all means and standard deviations.

Potential nightmare causes are illustrated in Figure 1. Stress was named as a cause by about two thirds of the overall sample. Psychiatrists rated stress the lowest and differed significantly from general practitioners ($\chi^2 = 6.00, df = 1, p < 0.05$), psychotherapists ($\chi^2 = 3.87, df = 1, p < 0.05$) and nightmare sufferers ($\chi^2 = 5.83, df = 1, p < 0.05$). Traumatic experience was also seen as a possible cause by most participants, but received the lowest rating in the patient sample with patients naming traumatic experiences significantly less frequently than general practitioners ($\chi^2 = 4.89, df = 1, p < 0.05$), psychotherapists ($\chi^2 = 5.56, df = 1, p < 0.05$) and in-patient professionals ($\chi^2 = 4.70, df = 1, p < 0.05$). Only very few

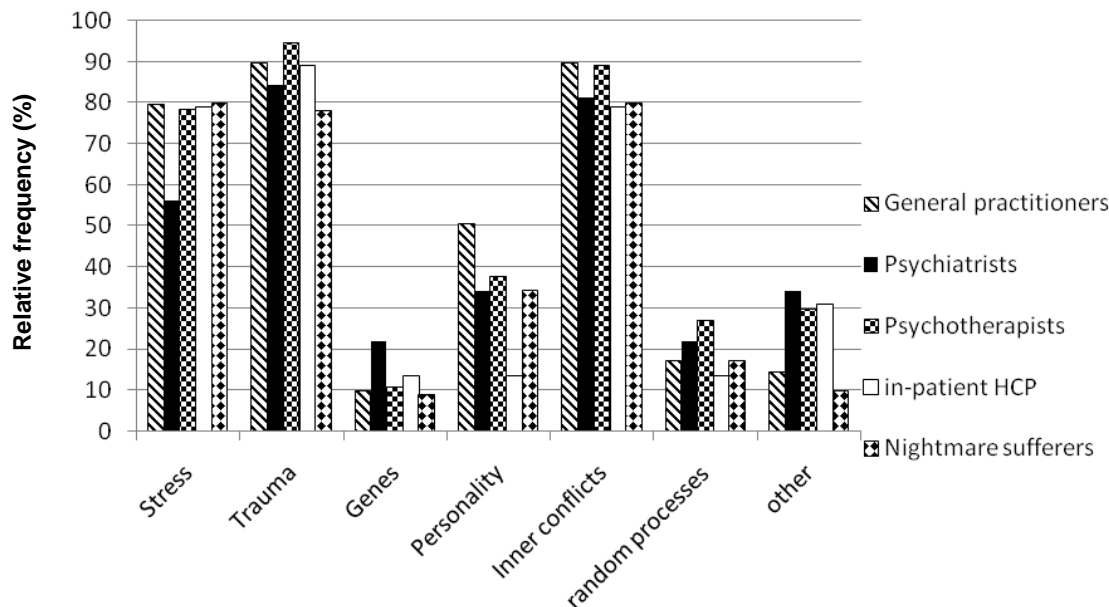


Figure 1. Frequency of causes of nightmares named by the different groups (HCP = Health care providers)

participants attributed nightmares to genetic factors; patients, with the lowest number, differed significantly from psychiatrists ($\chi^2 = 5.38$, $df = 1$, $p < 0.05$). While half of the general practitioners thought that personality factors are relevant causes of nightmares, only 13.6% of in-patient professionals agreed ($\chi^2 = 24.18$, $df = 1$, $p < 0.001$). In-patient professionals also differed significantly from psychiatrists ($\chi^2 = 6.32$, $df = 1$, $p < 0.05$), psychotherapists ($\chi^2 = 8.95$, $df = 1$, $p < 0.01$) and patients ($\chi^2 = 16.70$, $df = 1$, $p < 0.001$) in this question, and there was also a significant difference between general practitioners and patients ($\chi^2 = 4.30$, $df = 1$, $p < 0.05$). Inner conflicts were among the more frequently given potential causes of nightmares in all groups with no significant differences between groups. Only a minority of participants assumed that nightmares are the result of random processes. In addition, 21% of in-patient professionals named side-effects of medication as a potential cause of nightmares.

A total of 140 patients (41.8%) tried coping strategies on their own. Most frequently, patients talked about their nightmares with somebody (15.7%), wrote down their nightmares (15.0%), used relaxation techniques (14.2%) or lucid dreaming (10.7%). Some tried distractions such as reading, listening to audio drama or watching television (2.9%). A minority of patients rated their own coping strategies as helpful (8.6%), or as partly helpful (38%). Of the 195 patients who had not tried coping strategies on their own, most indicated that they had no idea how to deal with their nightmares (26.7%), while 16.9% stated that they had no need of coping strategies due to the low severity of their nightmare symptoms.

Ninety-nine patients (29.6%) reported having asked a

health care provider for help. Mainly, general practitioners were consulted (41.4%), followed by medical specialists (38.4%) and alternative practitioners (13.1%). While 3 patients had asked a fortune teller for help, none reported having asked a psychologist. Of the patients who reported asking a health care provider for help, 52 (52.5%) indicated that they got coping recommendations, mainly including psychotropic drugs (23.7%). Moreover, they were advised to reduce stress during the daytime (9.6%), use relaxation techniques (7.7%) or write down their nightmares (7.7%); 3 patients were referred to a psychotherapist. A minority of these 52 patients received were rated the coping recommendations they received as helpful or partly helpful (19%). Thus, majority of the recommendations (76%) provided by health care professionals were not considered helpful by the patients. Only 5.8% of general practitioners reported having looked for information on nightmares, significantly less frequently than psychiatrists (28.1%; $\chi^2 = 9.72$, $df = 1$, $p < 0.01$), in-patient health care providers (32.1%; $\chi^2 = 15.31$, $df = 1$, $p < 0.001$) and psychotherapists, who most frequently reported having looked for information on nightmares (59.6%; $\chi^2 = 37.47$, $df = 1$, $p < 0.001$). Psychotherapists also significantly surpassed psychiatrists ($\chi^2 = 6.80$, $df = 1$, $p < 0.01$) and in-patient health care providers ($\chi^2 = 8.38$, $df = 1$, $p < 0.01$). About every fourth nightmare sufferer (27.5%) had looked for information on nightmares themselves.

Relevance of nightmares for patient care, which was rated only by the health care professionals, significantly differed between the groups ($F(3, 208) = 13.97$, $p < 0.001$). General practitioners rated the relevance of nightmares lower than psychiatrists, psychotherapists

and in-patient professionals (Scheffé post-hoc comparison, $p < 0.001$ in each case). There were no significant differences between the other groups. Similarly, the rating for the need for treatment for nightmares differed between the groups of professionals ($F(3, 213) = 7.08$, $p < 0.001$), again with a significant difference between general practitioners, who rated the need for treatment the lowest, and in-patient professionals, who gave the highest rating (Scheffé-Test, $p < 0.001$).

Prevalence ratings were significantly correlated with estimations of the need for treatment ($r = 0.20$, $p < 0.05$), but were only marginally correlated with relevance of nightmares in patient care ($r = 0.16$, $p < 0.1$). As might be expected, the estimates of relevance and need for treatment were strongly correlated ($r = 0.67$, $p < 0.001$).

DISCUSSION

This study investigated attitudes, knowledge and coping approaches regarding nightmare disorders among health care providers and nightmare sufferers. The results show that even though each group of health care providers overestimated nightmare frequency, they had little knowledge about treatment. Relevance of nightmares and need for treatment were estimated to be of moderate importance despite the overestimate of nightmare prevalence. With the exception of psychotherapists, only a minority of health care providers were reported having looked for information about nightmares or nightmare treatment. Assumptions about the causes of nightmares differ between groups, especially regarding the relevance of stress and personality. This might be due to a lack of knowledge concerning nightmare disorders, but could also be confounded with general suppositions of the various professions. Hardly any professional was reported having recommended evidence-based treatment approaches as a coping strategy.

About every third patient tried out coping strategies on their own, but only a minority was content with the effects. Only one fourth of the patients sought professional help, mainly turning to general practitioners or medical specialists; one had asked a psychologist for help. Only one fourth of the patients who had received coping recommendations rated them as being helpful. However, although nightmare prevalence was highly overestimated, the relevance of nightmares and the need for treatment only received moderate ratings. Even when a person concerned was looking for help, they rarely were recommended to seek professional psychotherapeutic help.

Surprisingly, nobody sought help from the one group of health care providers who would most likely have been able to deal with nightmares in a professional way. Why does nobody suffering from nightmares ask a psychologist or psychotherapist for help? Maybe going to a “shrink” is more strongly stigmatized than one might

expect today. Or maybe the patients simply did not know to whom to turn for help.

Two more aspects need particular attention. First, nightmares are often put on par with post-traumatic stress disorder. However, one quarter of the patients did not mention trauma as a causal aspect. Thus, more attention should be paid to idiopathic nightmares as well. Second, only half of the psychiatrists consider stress to be a causal factor for nightmares, while general practitioners in particular considered personality to play an important role. This might indicate that medical professionals tend to overestimate trait factors and underestimate alterable factors to the detriment of their estimation of the effects of treatments for nightmares.

What is the implication of this study? While one in twenty people suffers from recurrent nightmares and several effective treatment approaches exist, health care providers do not take care of this problem at all and very few are aware of effective interventions or coping strategies. Thus, we do not primarily need more or better treatment approaches. Self-help approaches and concepts for group and individual therapy already exist. What we need is better dissemination of information within the health care system and among nightmare patients themselves. Particularly since effective and economic treatment approaches exist, it would be helpful for the patients if these treatments would be integrated in routine health care practice. Medical professionals as well as psychotherapists should learn about nightmare disorders and their treatment in their training. This would enable these groups of health care providers to reliably diagnose nightmare disorders and treat them effectively. General practitioners need to know more about the phenomenology and etiology of nightmares and should refer their patients to psychotherapists. Since patients have never consulted a psychotherapist on their own, it is of great relevance that practitioners in the primary care system take care of nightmare disorders and are well informed. If general practitioners refer patients to psychotherapists who are able to treat nightmares with one of the effective interventions, we will attain satisfactory care for nightmare sufferers.

This study was the first to investigate how nightmares are dealt with in patient care independent of other mental disorders. Several different groups were interviewed in order to gain insight concerning the point of view of the primary care health system (general practitioners), other professionals and a large sample of persons concerned with nightmares. Moreover, as we consider various levels of severity of mental disorders, people in an in-patient context were included as well. However, sample sizes differed between groups and the group of in-patients was too small to report meaningful results. The next step should be to develop or to improve information material for the health care system as well as for patients and it should be investigated whether this intervention leads to a positive result. Moreover, results about nightmare

treatment as well as about sleep disorders in general should also be published in interdisciplinary journals, because as pointed out, this is an important issue for the whole health care system and should be communicated among disciplines.

Conclusively, a large number of people suffering from severe nightmares on the one hand was found, and a lack in treatment offers on the other. In our opinion, this discrepancy should be dealt with, as nightmare disorders constrict peoples' activities in daily living as well as their quality of life.

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Conflict of Interests

The author(s) have not declared any conflict of interests.

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Full Length Research Paper

Confessions: Suicidal ideation on a Ghanaian radio program

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On July 17, 2013, listeners to a Ghanaian radio program were invited to telephone in and describe their personal experiences of suicidal ideation on air. Those who called the studio were asked four pointed questions by the program's host: (1) Have you ever formed a suicidal intention? (2) What precipitated the formation of the suicidal ideation? (3) What suicide method did you plan to use? (4) Why did you refrain from carrying out the act? The program was digitally recorded, transcribed, translated into English and then subjected to a rigorous analysis of the main thematic issues. This article presents results from the analysis of the data that accrued from the program and discusses the implications of such data for suicide research and prevention in Ghana. Findings indicate that all the suicide ideators were female, young and affected by traumatic life events or family conflict. All four ideators experienced suicidal thoughts but had not attempted suicide. Overall, the results are consistent with extant findings in the suicidology literature. Given the paucity of information on fatal and nonfatal suicidal behavior in Ghana, the information contained herein potentially advances current knowledge and understandings of the nature and patterns of suicidal behavior in this geographic and cultural region of the world.

Key words: Suicide, suicidal ideation, suicidal thoughts, suicidal behavior, Ghana.

INTRODUCTION

Suicidal ideation is a term employed to describe thoughts about, or an obsession or fixation with suicide (Gliatto and Rai, 1999; Sokero, 2006). Sometimes referred to as "suicidal thinking" or "suicidal thoughts," the assortment of behaviors deemed suicidal ideation varies immensely, ranging from brief or momentary thoughts about suicide to comprehensive or meticulous planning, role playing, self-harm and unsuccessful attempts of suicide, which may be purposely designed to fail or be noticed, or may

be fully intended to result in death. Although the majority of suicide ideators do not attempt to commit suicide, a large proportion of such persons do (Gliatto and Rai, 1999). Suicidal ideation is more common than attempted suicide and completed suicide (Gliatto and Rai, 1999; Sokero, 2006). Existing research indicates that suicidal ideation is generally associated with depression; however, suicide ideation is also connected with many other psychiatric disorders (Gliatto and Rai, 1999). Traumatic life

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events such as miscarriage and stillbirths, major medical health problems, abduction and sexual abuse also are known to increase the risk of suicidal ideation. Research also demonstrates that family conflicts such as divorce, separation and domestic violence contribute to suicide ideation.

Suicide in Ghana

According to Act 29, Section 57 of Ghana's Penal Code (1960), "whoever attempts to commit suicide shall be guilty of a misdemeanor." It should be stressed that this manifestly anti-suicide law is stringently enforced by the Ghanaian authorities. Thus, persons who make abortive attempts to kill themselves are immediately apprehended by police, summarily arraigned in criminal courts and swiftly prosecuted, after receiving any necessary medical treatment. If convicted, they are sentenced to custodial sentences, face hefty financial penalties, or are subjected to both sanctions. The stringent legal penalties for nonfatal suicidal behavior are reinforced by a strong cultural proscription of, and social stigma towards suicidal behavior. Among all ethnic groups in Ghana, suicidal behavior is denounced as a malefaction, a taboo and an abomination of the highest order (Greene, 2002; Nukunya, 2004). While ethnic group differences exist concerning the specific nature of mortuary beliefs and practices associated with suicidal deaths, there is universal condemnation of suicidal behavior in Ghana. Among all ethnic groups, self-inflicted death by suicide is regarded as a form of "bad death." Social reproach towards suicidal behavior is manifested in the brevity of the grieving period, discouragement of public mourning, the enactment of perfunctory burial rites, as well as the prohibition of funeral obsequies. In addition, following a suicide death, elaborate decontamination rituals are performed to purge the community of the taboo of suicide (Adinkrah, 2012).

Significance of Study

Suicide is a major and growing public health problem worldwide, claiming over one million lives annually across the globe. It is estimated that worldwide, some additional twenty to thirty million people make abortive attempts to terminate their lives each year (World Health Organization (WHO), 2012). Extant research and data indicate that Ghana is not exempted from suicide mortality and morbidity or the sequelae of nonfatal suicidal behavior (Adinkrah, 2010; Kokutse, 2012; Osafo et al., 2011). However, in Ghana, as in several African countries, the full scope and patterns of fatal and nonfatal suicidal behavior are significantly unknown (Adinkrah,

2010). The reasons for this are myriad. First, at present, many African countries do not collect, collate or disseminate their data regarding suicide mortality and morbidity (Windfuhr and Kapur, 2011). In Ghana, for example, no governmental agency is currently charged with responsibility for the collection and collation of statistics concerning fatal and nonfatal suicidal behavior. Second, suicide is both socially tabooed and legally proscribed behavior and discourse on the topic is shunned. Third, very few systematic studies currently exist on suicide and suicidal behavior in Ghana (Adinkrah, 2010). Thus, current understanding of suicide and suicidality in Ghana is still fragmented and limited.

Given the paucity of information on suicidal behavior in Ghana, suicidologists and other stakeholders exploit opportunities to garner information about suicidal behavior, motivated by the premise that additional knowledge about the nature and patterns of suicidal behavior will advance understanding of the issue and lead to the design and implementation of culturally-appropriate and effective prevention programs. The purpose of this article then was to contribute to the understanding of suicidal behavior and suicidality by systematically examining information on suicidal ideation obtained from a Ghanaian radio program. Recently a number of suicidologists (Colucci, 2013; Hjelmeland, 2013, Hjelmeland and Knizek, 2011; Lester, 2013; Windfuhr and Kapur, 2011) have forcefully argued for the incorporation of cultural analysis into the study and prevention of suicidal behavior. They urge suicidologists and suicide researchers to broaden the geographical scope of suicide research to include non-western, non-industrialized societies, as well as encourage the exploration of cultural contexts and perspectives in their analyses. In a similar vein, recently, a number of suicidologists have advocated a change in methodological approaches for the study of suicide phenomena, arguing that increased use of qualitative research approaches in suicide research will advance current understandings of suicide and suicidality (Hjelmeland and Knizek, 2011).

The current research, with its focus on a content analysis of cases of suicidal ideation expressed on a Ghanaian radio program, potentially improves current understanding of suicidal determinants and identification of suicide risk factors while simultaneously contributing to a cultural understanding of suicidal behavior. Specifically, it provides some answers to two major questions: what makes people form suicidal intentions in Ghana? Are these intentions and their triggers different from findings contained in the international suicidological literature?

METHODOLOGY

On July 17, 2013, Peace FM 104.3, a leading Ghanaian radio

station, featured a half-hour program focusing on suicidal ideation. Established in May, 1999, Peace FM is a popular commercial radio station based in Ghana. It is currently the most listened to commercial radio station in Accra, Ghana's capital. The station has extensive coverage throughout the country, reaching about 90% of Ghana's entire population. In 2009, The World Geographical Media adjudged Peace FM station "one of the top 50 most talked about radio stations in the World" (Nyaba, 2009). Today, live broadcasts and recorded programs from Peace FM can be accessed through the internet. The *Confessions* program is broadcast every Wednesday. The featured topic for each program is different and is announced several hours in advance of the actual broadcast. During the particular program of *Confessions* which is the focus of this research, listeners were invited to call in to recount personal instances in their lives when they considered committing suicide. Callers were also asked to provide details about the events that triggered the formation of the suicidal thoughts and what method they intended to use to commit the act. Finally, they were asked to indicate what kept them from enacting the suicidal act. At the beginning of the show, potential callers were promised complete anonymity; telephone numbers, names and other identifiable information were not solicited. The program was broadcast in a combination of English and the local Akan language. This author, who is a native Akan speaker, recorded the entire radio program on a digital audio recorder, then transcribed it for this research. The transcribed data were then subjected to rigorous and systematic analysis. A summary of each case is provided for illustrative purposes and to illuminate the study.

RESULTS

The data revealed that all four suicide ideators who called in were female. Another important finding was that in all four cases, suicidal ideation was precipitated by a traumatic life event or family conflict. In one case, the caller felt distressed over the fact that she and her daughter had been physically neglected and psychologically abandoned by her husband, following the birth of her daughter. In another case, a woman felt melancholic after learning about her adoptee status, withheld from her since she was a child. In the two other cases, the women were intensely distressed by the life-altering injuries that they sustained from automobile accidents.

Two of the suicide ideators who revealed that they were parents indicated that they had thought about committing suicide but had been restrained from carrying out the act because of their children. One of the women had a newly-born infant at the time she formed the suicidal intention; the other had three older children. Regarding suicide method, one suicide ideator had contemplated using a knife to kill herself while another thought about using poison. The other women provided no information on the method they considered using to commit suicide. The data show that two of the suicide ideators had not totally abandoned the idea of committing suicide and were in need of urgent medical and material assistance as well as counseling at the time that they

called in. The host of the program used elements of Christian religion, including scripture, prayers and sermonizing about God—the creator, as the maker and owner of life and the only one who should take life—to appeal to the suicide ideators to refrain from harboring suicidal thoughts and pursuing such intentions ever again.

Case histories

In this first case, the suicidal ideation occurred about a year prior to the call-in program. At that time, the subject had just given birth to an infant daughter and was residing with her husband. She indicated that prior to the birth of her daughter, she was enjoying life with her husband. Things changed drastically following the birth of her baby. Her husband started neglecting her and her baby, leaving them alone in the house from morning, only returning home late in the evening hours. She said she did not have a job at the time and felt she and her daughter were being financially, materially and emotionally neglected by the husband. Frustrated and betrayed, she contemplated suicide. She recollected telling herself: "If I can't walk out of this marriage, then what is the point of me living." She told the host of the program that she had several recurrent thoughts of killing her daughter and then herself. She thought about finding and drinking a poisonous chemical to end her life. She did not reveal her suicidal ideation to her husband. Neither did she reveal her suicidal thoughts to her mother or friends. What prevented her from carrying out her suicidal thoughts? She thought more deeply about her mother and her daughter. She felt concerned that upon her death, her mother would miss her immensely. She also thought about her daughter who she realized was an innocent victim in her crisis. Each time she looked at her daughter, she would reconsider her decision. Regarding the morality of suicide, the caller indicated that at the time she was experiencing suicidal ideation, she did not consider suicide as an immoral mode of death. Neither was she afraid of the act of taking her life. The caller stated: "when you get into certain life situations, you don't even consider the wrongfulness of suicide as an act." She further intimated that when one encounters emotionally debilitating family events and one is not truly "God-fearing," it becomes easy for one to carry out suicidal intentions. She currently looks with regret upon a time that she ever thought about killing herself at all. She indicated that at the time of the call to the radio station, she had been separated from her husband and was now content with her life. The host thanked her for changing her mind about committing suicide and advised her to continue praying. She agreed with the host of the program that the life that we are given never really belongs to us. Concluding, the host also told her: "I hope that you

keep praying for such thoughts not to recur. Find happiness in God and not happiness in man.”

In Case 2, a female caller telephoned to say that she once thought about killing herself. She sighed very heavily when her phone call was answered. This prompted the host to ask her if she was filled with pain. She responded that “*nsemwɔhɔpaa*” (There is a lot going on). She said there was so much going on in her life that she had almost lost her mind (*abɔ me dam*). She said talking was even difficult for her. She said she cried a lot because of her situation which she described as hopeless. She described herself as a mother of three children. She said she was physically deformed and that her level of disfigurement was extensive. She indicated that her face and “everything was ruined” (*biribiaraasee*) which made her feel less than human. She feels that when they count human beings, she is not counted as one (*yɛkannipaayɛnkan me nka ho*). The physical deformity arose from an automobile accident that occurred three years prior to her call into the program. She said that when she compared her prior physical looks with her current looks, she feels utterly depressed, distressed and melancholic. She indicated that if it were not for the children, she would have killed herself a long time ago. After hearing her story, the host played the song: “I will praise my maker while I have breath.” The host asked her: “Do you think where you are, God can’t do anything about it?” She was reminded that even though things are bad, she still has life within her. The call terminated abruptly. The host expressed disappointment, telling the caller who still sounded suicidal that “something is going to happen, keep listening.”

The 24-year-old woman in the third case telephoned in with a hoarse voice. This prompted the host of the program to ask the caller whether this was her normal voice or if she had been crying. She responded that she was very sad (*me wɛɛahow*) before recounting her story. She shared that prior to her formation of the suicidal ideation, she lived with an older woman whom she regarded as a mother. She emphasized that the woman had treated her very well, in the same manner that someone would treat his or her biological child. Indeed, she had no reason to doubt that this was her biological mother. Her suicidal ideation developed after she overheard this woman telling another person, that she was not her real child. The older woman revealed to the other person that the caller lost both of her parents in infancy and that the older woman took her into her care and raised her as her own child. The caller said she was shocked to hear the story of her adoptee status. She later confronted the woman about the authenticity of the story. After several attempts at evading the issue, the older woman confirmed the account that the caller had overheard. According to her when she first heard the story, “*me yɛɛbasaa*” (I felt despondent). She stated that

if both of her parents were deceased, there was no point in continuing to live and if it were not for her belief in God, she would not be living. She was especially distressed by the fact that she did not know any of her biological family members. She revealed these suicidal thoughts to her Christian pastor who talked to her at length and dissuaded her from acting on her suicidal ideation. The host of the program told her: “You don’t have parents, but you have God.” The caller stated that “when I see somebody with his parents, I feel *basaa* (downhearted). The presenter replied. “If you don’t have parents on this earth, it is painful but you have God. You don’t know what plan God has for you.”

The caller in Case 4 was a 23-year-old woman who began the interview with the statement, “*Ewiasɛyɛya, Ewiasennyɛɛɛ. Sɛwonnibiara a, w’asɛmyɛmmɔbɔ* (Life is painful; Life is not fun; If you don’t have a helper, you are miserable). She however agreed with the host when he responded that “*Nyametease*” (God lives). According to the caller, she had migrated from her village into the city to make a living. She was knocked down by a moving motor vehicle and sustained injuries to her legs and her spine. While in the hospital, the driver responsible for causing the accident took care of her financially and materially but stopped offering assistance as soon as she was discharged from the hospital. She was also experiencing ongoing health problems including pains in her leg and waist caused by injuries sustained from the accident and was unable to walk properly. She has no money to go to the hospital for any additional treatment for her injuries and pain. Without employment, she also lacks the means to feed herself and meet other basic needs of sustenance. She laments the fact that at her young age, she is unmarried, has no children but is saddled with unbearable problems. She thought about using a knife to kill herself. The caller maintained that she still harbored suicidal intentions but that the knife she planned to use to commit suicide was not sharp enough. On numerous occasions, she has asked her mother to sharpen the knife without telling her the reason why she wanted it sharpened but her mother had never acted on her requests. She indicated that the physical pain she suffered was particularly unbearable at night, so much so that she had difficulty sleeping (*me brɛanadwo; mentuminna*). She described extensive swelling in one of her legs. She believes she will be able to find peaceful rest upon her death. “*Mɛku me ho namakɔ home; me ku me ho a, na ne nyinaa to atwa*” (I’ll kill myself in order to gain respite; when I kill myself, all my suffering will end). The host of the program concluded the interview with her with a request that she talk to him off air after the program.

DISCUSSION

The results of this research are generally consistent with

findings from the suicide literature. Certain facts that emerged from the analysis merit further discussion. As noted, all suicide ideators who called in were female. This is worth noting given the fact that the vast majority of persons who commit both fatal and nonfatal suicidal acts in Ghana are male (Adinkrah, 2010). The cultural basis for this finding is also worth noting. In Ghana, males are less likely than females to discuss their problems with others. It is considered unmasculine to seek social support through sharing one's difficulties. A man is expected to face his problems stoically and alone. If he cannot find solutions, it is better to die than live a shameful life in perpetuity (Adinkrah, 2012). In general, Ghanaian masculinity ideals promote independence and discourage help-seeking behavior in men. Thus, men are less likely to seek help from their family, friends, neighbors or a talk show host.

Another important finding that emerged from the analysis of data is that in all four cases examined, the suicidal ideation was precipitated by a traumatic life event or family crisis. This finding is consistent with findings from the suicidology literature which indicates that suffering a major adverse family or life event is a significant contributing factor for suicide risk (Rihmer, 2011). In two of the cases, the callers experienced chronic or disabling medical disorders while in the two other cases, the callers had experienced unfortunate family events. It is notable that two of the suicide ideators contemplated suicide but were restrained from committing the act because of their children. One of the women had a newborn baby; the other had three children. Both said they were restrained from killing themselves because of their children. This coincides with extant findings from the suicide literature which indicates that having children is a protective factor against suicide (Windfuhr and Kapur, 2011).

Regarding the preferred methods of suicide in these cases of suicide ideation, one woman thought about using a knife to kill herself while another thought about using poison. This is consistent with gender-based findings in epidemiological studies of suicidal behavior in Ghana and globally. In Ghana, and globally, males are more likely to use the more immediately-lethal methods such as self-inflicted gun shots and hanging while females are apt to use less violent methods like ingestion of poison, drug overdose and cutting (Windfuhr and Kapur, 2011). It is remarkable that four persons called within the program's thirty minute time-frame to share their suicidal intentions with the program host. As previously noted, in Ghana, suicide is highly stigmatized behavior, with serious implications for the suicide ideator, the suicide attempter, and survivors bereaved by suicide. Thus, disclosing suicidal thoughts to a stranger requires fortitude. Although callers were promised anonymity and confidentiality, it is certainly possible that listeners who

were suicide ideators but did not call in were not convinced by the claims of confidentiality promised. They may have feared the possibility of being exposed and were therefore inhibited about calling in to share their suicidal ideation.

RECOMMENDATIONS AND LIMITATIONS

The findings of this study have implications for suicide prevention strategies in Ghana. Persons or individuals who suffer negative family events such as familial abandonment or neglect, need counseling while persons who suffer traumatic life events such as automobile accidents need medical and material assistance such as medical care and supplemental material care (money, food, clothing etc.). The study is not without its limitations. One limitation is the small number of cases examined. Second, the research focused exclusively on suicidal ideation expressed by callers to a radio program. Thus, it is limited in its capacity to tell us about suicide ideation in Ghana more generally. Thus, the conclusions presented here are tentative. Additional research is recommended to explore some of the issues examined in this study in greater depth. Despite these shortcomings, the study has something to offer to the study of suicide and suicidality in Ghana. In conclusion, the analysis of information from myriad sources, including the print and electronic media, has the potential to contribute to existing knowledge on suicidal behavior in Ghana. This is necessary, given the current paucity of information on the phenomenon.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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Full Length Research Paper

Underweight, overweight and obesity amongst young adults in Ota, Nigeria

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The pattern of body weight abnormality amongst persons in their early adulthood in Ota, Southwest Nigeria was investigated. A total of 341 healthy young adults (194 male; 147 female), aged 20 – 35 years participated in the study. Anthropometric measurements and WHO cut-offs were used to categorize their body weights into normal weight, underweight, overweight and obesity. Males were significantly ($p < 0.05$) bigger in size (weight and height) than females. Body weight abnormality was higher in females (36.0%) than males (23.7%). Underweight was prevalent (12.9%) amongst females but low (2.6%) in males; 2.7% of females were severely underweight. The most prevalent abnormality was overweight (19.7% in females; 18.6% in males) whereas obesity was the least (3.4% in females; 2.6% in males). Gender differences appear to influence the body weights of the young adults in Ota, Nigeria. The study suggests a dual challenge of malnutrition and over-nutrition amongst females.

Key words: BMI, body weight abnormality, underweight, overweight, obesity, early adulthood.

INTRODUCTION

Anthropometric measurements are simple and widely used diagnostic tools for determining human development, maturation and wellness (Chinedu et al., 2013; WHO, 1995). Body mass index, BMI, indicates how much an individual's body weight conforms or departs from what is normal, healthy or desirable for a person of a specific height. Body weights are generally classified into normal weight, underweight, overweight or obesity using WHO cut-offs (WHO, 1995). Underweight, overweight and obesity have been linked to several morbidities and mortality and are therefore considered as abnormal or unhealthy body weights (Flegal et al., 2005; WHO, 1995). Obesity and underweight are the extremes of body weight abnormalities. Obesity causes physical discomfort,

psychological trauma and predisposes the individual to a complex health condition termed metabolic syndrome characterized by diabetes, lipid disorders, sleep apnea, respiratory diseases and hypertension leading to accelerated aging and cardiovascular disease (Abate, 1999; Akerman et al., 2004; Boden; 2002; Bustos et al., 2005; Bray, 2004). Underweight, on the other hand, is associated with malnutrition, anemia and infectious diseases such as malaria, pneumonia and HIV/AIDS and death (WHO, 1995; Durazo-Arvizu et al., 2008). Underweight patients often lack sufficient nutritional reserves to draw from during ill health and hence, are at a higher risk of mortality (Flegal et al., 2005).

The nutritional challenges facing developing nations

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Table 1. Anthropometric measurements: Weight, height, and BMI of young adults, aged 20 – 35 years, in Ota, Southwest Nigeria.

Parameter	Gender		Overall
	Male	Female	
Weight (kg)	71.57 ± 0.81*	63.76 ± 1.77	68.20 ± 0.92
Height (m)	1.78 ± 0.005*	1.66 ± 0.008	1.73 ± 0.005
BMI (kg/m ²)	22.77 ± 0.22 *	22.50 ± 0.30	22.66 ± 0.18

Mean ± SEM; *Male is significantly ($P < 0.05$) different from female (paired samples t-tests = .000 for weight, height and BMI).

have been compounded by rising incidence of obesity, a phenomenon attributed to the so called nutritional transition (Popkin, 1998). As a result, many developing countries including Nigeria are now plagued with the burden of weight excess due to over-nutrition and weight deficiency resulting from malnutrition (Durazo-Arvizu et al., 2008; Popkin and Doak, 1998; WHO, 1998). In Nigeria, a paradox of persistent underweight in children and a scourge of obesity in adults have been reported (Chinedu et al., 2012). Adult obesity has been reported to have reached an epidemic level constituting a major health threat (Akpa and Mato, 2008; Bakari et al., 2007; Kadiri and Salako, 1997). A local Nigerian newspaper recently described obesity as “a new silent killer in town” joining the ranks of malaria, HIV/AIDS and malnutrition (Ogundipe and Obinna, 2010). Most of the reports were however, based on studies involving middle aged adults or patients receiving treatment for hypertension, diabetes or related diseases (Puepet et al., 2002). The present study sought to examine the trend in body weight abnormality of persons in their early adulthood in Ota, Nigeria. Persons in the age bracket of 20 – 35 years are generally at the peak of their strength, biological functions and health, and are not subject to the problems of senescence (Shephard, 1998). Body weights of the age group could give an insight into the overall health status of a given population. In the study, anthropometric measurements and WHO cut-off were used to determine the prevalence of underweight, overweight and obesity among the young adult population of Ota, Southwest Nigeria.

SUBJECTS AND METHODS

A total of 341 healthy subjects (194 males and 147 non-pregnant females), aged 20–35 years, voluntarily participated in the study. All the subjects were residents of Canaanland in Ota, Ogun State, Nigeria. Weight (kg) was measured to the nearest 0.01 kg using Produex™ digital balance, Springfield, USA. Height (m) was measured to the nearest 0.001 m using meter rule with the subject standing barefooted, without cap or headgear. BMI (kg/m²) was calculated as $\text{Weight}/(\text{Height})^2$. Body weight categories were defined using WHO cut-offs as follows: underweight = $\text{BMI} \leq 18.4$ kg/m²; normal weight = $\text{BMI} \geq 18.5 \leq 24.9$ kg/m²; overweight = $\text{BMI} \geq 25.0 \leq 29.9$ kg/m²; obesity = $\text{BMI} \geq 30.0$ kg/m² (WHO, 1995). Obesity was further classified into three as follows: Class I = $\text{BMI} \geq 30.0 \leq 34.9$ kg/m², Class II = $\text{BMI} \geq 35.0 \leq 39.9$ kg/m² and Class

III = $\text{BMI} \geq 40.0$ kg/m². $\text{BMI} < 16.5$ kg/m² was classified as severely underweight.

Analyses of data were performed using SPSS software. Paired sample t-tests and Pearson chi-square tests were used to determine the significance of differences between the sexes. Differences were said to be significant at the level of $P < 0.05$. Results are expressed as mean ± standard error of mean (SEM).

RESULTS

Table 1 shows the mean values of the weight, height and BMI of the subjects. Male subjects had significantly ($p < 0.05$) higher values of weight, height and BMI than females. Male subjects weighed 71.57 ± 0.81 kg as against 63.76 ± 1.77 kg for females. The height was 1.78 ± 0.005 m for males and 1.66 ± 0.008 m for female subjects. The average BMI for both sexes was within the normal weight category; it was 22.77 ± 0.22 and 22.50 ± 0.30 kg/m² for male and female subjects, respectively. Paired samples tests showed a significance (2-tailed) value of .000 for weight, height and BMI of male and female subjects, respectively.

Table 2 shows the prevalence of the different body weight categories. Normal body weight was 76.3 and 64.0% respectively, for male and female subjects. Some of the female subjects (2.7%) were severely underweight whereas the male subjects had none in that category. The prevalence of Class I obesity was 2.1 and 2.7%, respectively, for the male and female subjects whereas Class II obesity was 0.5 and 0.7% prevalent in male and female subjects, respectively. There was no subject in Class III obesity. Pearson Chi-Square showed a significance (2 sided) of .008 between the sexes.

The percentage distribution of abnormal weight is shown in Figure 1. Overweight was 18.6% prevalent whereas underweight and obesity each had 2.6% prevalence in male subjects. In contrast, a prevalence of 12.9, 19.7 and 3.4%, respectively, was recorded for underweight, overweight and obesity amongst female subjects.

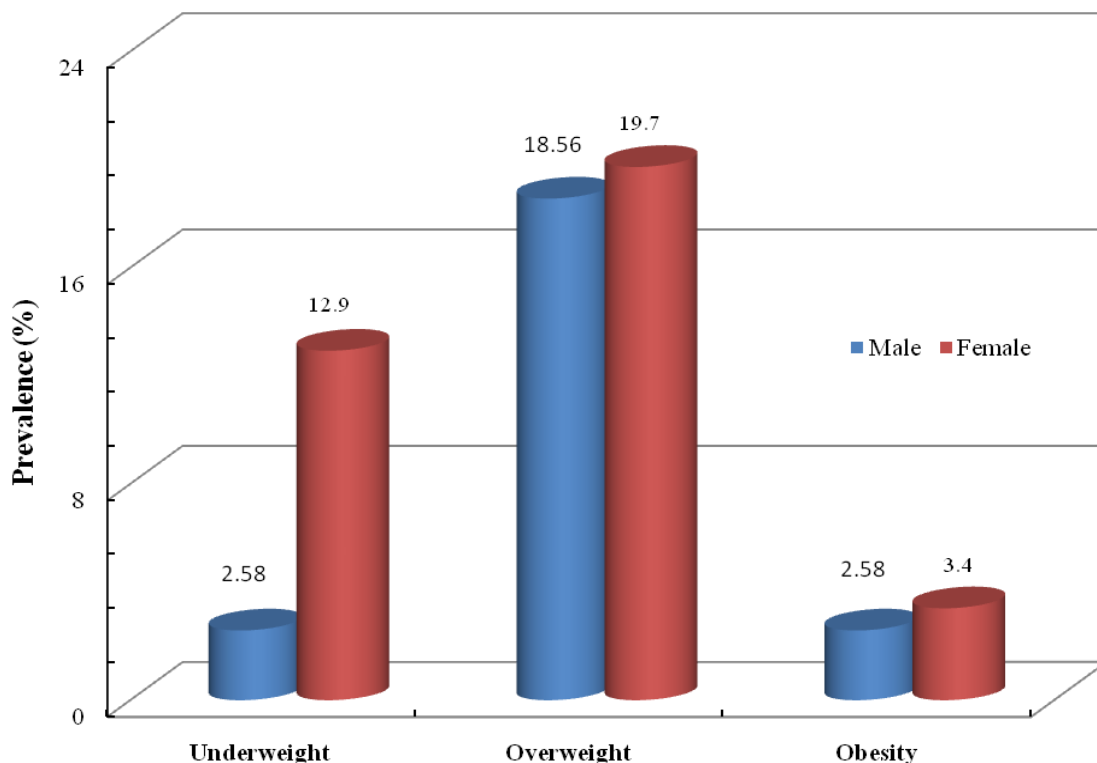
DISCUSSION

The anthropometric measurements show that male subjects were significantly ($p < 0.05$) bigger than their

Table 2. Prevalence of different body weight categories amongst young adults aged 20 – 35 years, in Ota, Southwest Nigeria.

BMI (kg/m ²)	Body weight category	Frequency [Number (%)]		
		*Male	Female	Overall
< 16.5	Severely Underweight	0 (0.0)	4 (2.7)	4 (1.2)
≥ 16.5 ≤ 18.4	Underweight	5 (2.6)	15 (10.2)	20 (5.9)
≥ 18.5 ≤ 24.9	Normal weight	148 (76.3)	94 (64.0)	242 (71.0)
≥ 25.0 ≤ 29.9	Overweight	36 (18.6)	29 (19.7)	65 (19.1)
≥ 30.0 ≤ 34.9	Obesity (Class I)	4 (2.1)	4 (2.7)	8 (2.4)
≥ 35.0 ≤ 39.9	Obesity (Class II)	1 (0.5)	1 (0.7)	2 (0.6)
> 40.0	Obesity (Class III)	0 (0.0)	0 (0.0)	0 (0.0)
	Total	194 (100)	147 (100)	341 (100)

*Male is significantly ($P < 0.05$) different from female (Pearson Chi-Square = .008 for chi-square tests of gender and body weight categories).

**Figure 1.** Percentage distribution of abnormal body weights (underweight, overweight and obesity) amongst male and female young adults in Ota, Southwest Nigeria.

female counterparts. The pattern of body weight distribution among the sexes was also significantly different at $P < 0.05$. A large number of the subjects had normal weight which signifies good health and low mortality rate; the prevalence of normal weight was higher in male subjects (76.3%) compared to females (64.0%). Body weight abnormalities (underweight, overweight and

obesity) occurred more in females than in male subjects (Figure 1). The trend is similar to reports of other population-based studies in Nigeria (Bakari et al., 2007; Peupet et al., 2002). It underscores the role of sex as a determinant of the stature and body weight of individuals. Gender differences in lifestyles and dietary habits could account for the observed differences between male and

female subjects. The high incidence of underweight in the female subjects may be attributed to the 'slim-fit' syndrome among young Nigerian women. Most women in the age range are unduly concerned about their shape and make deliberate efforts to maintain a trim shape. The social consideration profoundly affects the diets and eating pattern of many young women in Nigeria. As a result of poor eating habits, the women end up being malnourished. Unfortunately, low body weight has been linked to greater mortality risk; underweight individuals usually do not have enough nutritional reserve to mobilize during illness (Akpa and Mato, 2008). Females within this age range may therefore be more vulnerable to infectious diseases such as malaria, pneumonia, diarrhea and HIV/AIDS (Flegal et al., 2005). Males, on the other hand, have little concern about their weight.

Overall, the incidence of weight excess exceeded that of weight deficiency. Overweight was the most prevalent weight abnormality in both male and female subjects. The high prevalence of overweight in both sexes is very significant. There appears to be a significant weight gain and a gradual build-up of body weight at early adulthood. This may eventually snowball into obesity at a later period of life with advancement in age and attendant assumption of a more sedentary and restful lifestyle. The prevalence of overweight and obesity was similar to that reported in Jos, another Nigerian city (Puepet et al., 2002). Higher incidence of obesity and overweight in female subjects may be as a result of the greater tendency of women to accumulate more fat than their male counterparts. There is low prevalence of obesity amongst the young adult subjects. This may be due to the fact that people within the age bracket are usually very active and at the very peak of their strength, biological functions and health, and devoid of the problems of senescence (Shephard, 1998). Interestingly, Class I and II obesity were recorded in both male and female subjects. Class I obesity was significantly more prevalent than Class II obesity.

Conclusion

Overweight was the most prevalent body weight abnormality amongst young adults in Ota, Nigeria. Sex and other social factors generally influence the stature and body weight status of individuals within the age range. Females are more prone to body weight abnormality than males of the same age. Overweight and underweight were widespread amongst female subjects. There is need to tackle the dual challenge of overweight and underweight amongst young female Nigerian adults.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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