APPLICATION OF A COMMUNITY DIAGNOSIS SURVEY APPROACH TO THE ASSESSMENT OF ADOLESCENT HEALTH AT KORLE WORKO, ACCRA, GHANA

ABSTRACT

In recent times, adolescent health has assumed great significance globally since adolescents bear a considerable proportion of the global disease and injury burden. Thus investing their health can yield substantial benefit. Community surveys are useful tools for identifying the needs of adolescents and promoting their health. This study was part of medical education program with the objective of identifying the health and social problems of adolescents living in Korle Worko, a suburb of Accra, Ghana and the necessary interventions for addresses these health and social problems. This cross-sectional study was conducted in 2015 using structured questionnaires which were administered to 729 heads of households and 228 adolescents. Weight and height measurements were performed on the adolescents while key informant interviews were conducted among community elders and adolescents. Community mapping and pair-wise matrix construction were also done. The data was summarized using SPSS and Geographic Information Systems. The six most commonly reported health complaints of adolescents were stomachache, common cold, skin rashes, feeling sad or crying a lot, lack of concentration and hearing problems or earache. Asthma and sickle cell disease were the most common chronic diseases reported. Whereas 22.7% of the females were overweight, 7.4% of the males were overweight. The percentage of females with severe thinness was 6.7% and males 17.6%. The spatial pattern of alcohol use correlates with drug abuse suggesting that adolescent risky behaviour may be influenced by antisocial behaviour in the community at large. Respiratory diseases, over-nutrition, under-nutrition, and mental health problems were prominent. The adolescent health service should be expanded to target these diseases. Efforts at preventing lifestyle related risk factors should also target the areas of influence within the community.

Keywords: Adolescent Health, Community Diagnostic Survey, participatory mapping

1.0 INTRODUCTION

Adolescents are young people between the ages of 10 and 19 years.[1] They are generally regarded as healthy, however, many adolescents do die prematurely from preventable and treatable communicable diseases, accidents, suicide, violence, pregnancy related complications and other illnesses.[1,2,3,4] Adolescents also suffer from chronic health problems and disability.[1,2,5] In 2013, HIV/AIDS, road injuries, drowning and transport injuries were reported as the leading causes of adolescent death world-wide.[6] Risky health behaviours are established during adolescence and continue into adulthood but these behaviours can be avoided through appropriate education and the use of prevention science.[2,3,4,7,8] They include unhealthy eating habits, lack of physical activity, alcohol and substance abuse, tobacco use, violence and other antisocial behaviours.[1,2,3] Experimental sexual behaviour also occurs at this age and may lead to teenage pregnancy with its complications and sexually transmitted infections including, HIV infection.[1,2,3] The rise in HIV infection in this age group particularly in sub-Saharan Africa is currently a matter of grave concern.[3]

Although adolescent health is often neglected, investing in adolescent health can potentially save lives now, save lives in future and save the lives of the next generation. [1,2] Besides, adolescent health problems often require community-based solutions which necessitates engaging with communities.[1,2,9,10] Community surveys of adolescent health have been described as useful tools for promoting adolescent health.[11] Studies in Ghana approaching adolescent health from a community perspective are limited. Community Diagnosis involves using quantitative and qualitative research methods such as surveys, interviews and observation to describe the health of citizens and the factors which influence their health.[12,13] These factors may be social, physical or biological. This community diagnosis was planned at Korle Worko to assess the population characteristics, health status and major health determinants of the people. During community entry, adolescent health problems were reported as a major issue facing the community. Thus, the survey focused on adolescent health as one of the specific objectives and sought to identify health and social problems of adolescents living in Korle Worko. The uniqueness of this community diagnostic approach was the inclusion of spatial mapping through transect walking and participatory mapping. The study was guided by the following research questions:

1. What are the most commonly reported health problems in the study area?
2. Are there significant differences in the levels overweight and thinness between adolescent males and females in the community?

3. Are there spatial relationships between social vices in Korle Worko?

2.0 METHODOLOGY

2.1 Study Area

Korle Worko is a small community, located in the heart of Accra, the capital city of Ghana. It is found within the central business area, in the Asiedu-Kekete Sub-Metropolitan area. It is bordered by two major markets and is made up of an inner city population. The area is governed administratively by the local authority through the Metropolitan Assembly, headed by the Metropolitan Chief Executive. The area has an Adolescent Health Centre located at the Ussher Polyclinic, the main government primary care facility in the Sub-Metropolitan area. The centre was set up in 2004 to curb the high rate of teenage pregnancy occurring in the area at the time and to encourage mothers to attend the nutrition rehabilitation centre at the polyclinic when their children are referred there. The services provided at the centre include HIV counselling, Family Planning services, investigation of Sexually Transmitted Infection (STI's) and treatment, safe abortion, career counselling and health education. The centre has a sewing centre, provided to train girls who do not wish to continue their education after basic education. However, anecdotal evidence suggests that the centre is patronised by females living outside the community rather than the local residents. Figure 1 is a map of Accra Metropolitan Area showing the location of Korle Worko followed by a google map showing the layout of Korle Worko community.

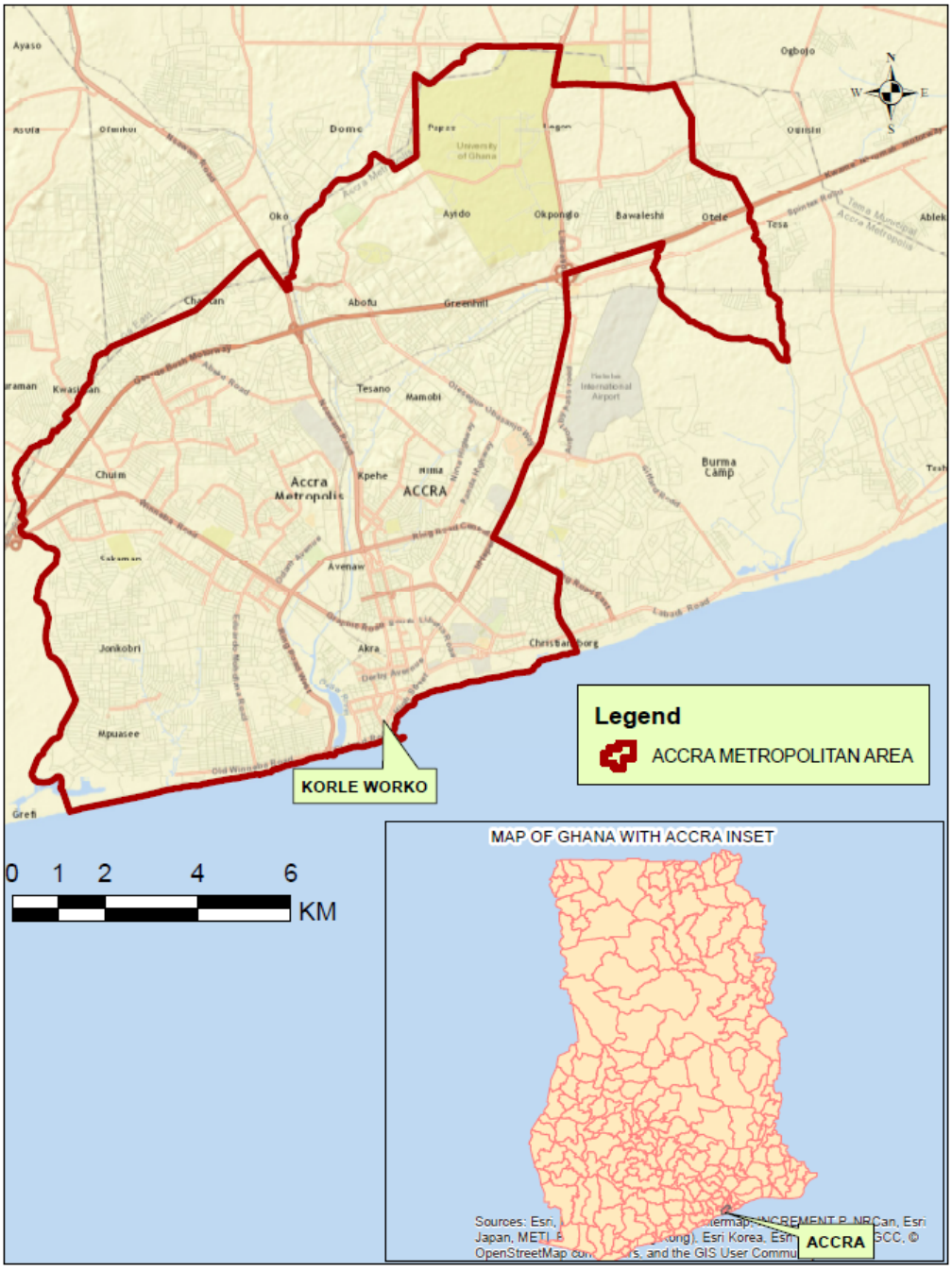

Figure 1: Map of Accra Metropolitan Area (Accra) showing the location of Korle Worko

Figure 2: Google map showing the layout of the study area

The Princess Marie Louise Children's Hospital (PML) also located in the suburb, attends to adolescents up to the age of 18 years. The hospital is known for pioneering work on malnutrition and it has the largest nutritional rehabilitation service in the country. The schools in the locality receive health education through the Ghana Health Service, school health programme, the School Health Education Programme (SHEP) run by the Ghana Education Service and outreach services organised by the adolescent health centre.

2.1 Study Design and Sampling Method

A cross-sectional survey was conducted between July and September 2015 by 1st clinical year medical students of the School of Medicine and Dentistry, University of Ghana as part of a Community Diagnosis Survey involving households in the Korle Worko sub-metropolitan area. The health of adolescents in the community was investigated during the process. Quantitative and qualitative methods were used including key informant interviews and

participatory methods. Purposive sampling was used rather than cluster sampling on this occasion because of a need to avoid unsafe areas within the community.

For the purpose of this study adolescents were defined as young persons within the age group of 10-19 years.[1] All heads of households who consented to join the survey were included, together with adolescents in their households. In the absence of the head of household a consenting adult deemed to have ample knowledge on the subject matter of interest was qualified to respond. Other adolescents who lived in the community who volunteered to join the study were also included. The key informants were adults who lived within the community who had been nominated by the assembly man as the area.

2.3 Data Collection Instruments and Methods

Separate interviews were carried out with adolescents and heads of households using two different structured questionnaires. The questionnaire administered to heads of household contained a question on the main problems of adolescents as part of a series of questions on the general health of the community. The questionnaire administered to the adolescents was specifically designed to interrogate adolescent health issues. It covered conditions such as, frequent illnesses, chronic diseases, smoking and drinking habits, sexual habits and felt needs of the adolescents. This questionnaire was designed by the principal investigator but administered by the students. They were pretested and corrected before use.

Weight and height measurements were performed on the adolescents. A Fazzini weighing scale and Harpenden Pocket stadiometer with a Spirit level were used. The height measurements were performed in centimetres and reported to the nearest 0.1 of a centimetre while the weight measurements were done up to the nearest 0.1kg. The students were taught how to make these measurements in a separate practical session prior to the study. The students were also taught how to use their phones loaded collector for ArcGIS to obtain co-ordinates for the households they visited and to plot and interpret these coordinates using Geographic Information Systems with guidance from the Remote Sensing and Geographic Information Systems Laboratory at the Department of Geography and Resource Development, University of Ghana. Participatory Community Mapping and key informant interviews were carried out with the Assembly member and some selected members of the community. A map was constructed with the key informants using the information they provided. It showed the areas of concentration of anti-social behaviours within the community. The information provided was also used to construct a pair-wise ranking matrix on adolescent health problems.

Completed questionnaires were checked on the field by field supervisors. The data from the adolescent questionnaires were entered into an SPSS database and analysed using SPSS version 21 and presented in graphs, tables and maps. The co-ordinates for the location of the residence of adolescents in the household survey were taken and the ArcGIS software was used to map some of the responses. Students who were most skilled in the use of computers did the GIS analysis.

3.0 RESULTS AND DISCUSSION

Altogether, 729 heads of household out of 750 responded to the question on adolescent health problems in the community and 228 adolescent questionnaires were obtained and analysed. Their ages ranged from 10 to 19 years with an average of 14.6 years. Data on sex was available in 227 adolescents, including 119 (52.4%) females and 108 (47.6 %) males. The Body mass index of the adolescents measured is in Figure 3. Altogether, 15.4% (35) of the adolescents were either overweight or obese though among the females, 22.7% (27) of them were overweight or obese compared with only 7.4% (8) of the males. In addition, 11.9% (27) of the adolescents were underweight comprising 6.7% (8) females and 17.6% (19) of the males. The six most common health complaints reported by adolescents were stomach ache, common cold, skin rashes, feeling sad or crying a lot, lack of concentration and hearing problems or ear ache (Fig. 2). In all, 27 out of 225 (11.8%) adolescents reported chronic diseases and these were, asthma 13(48.2%), sickle cell disease 5(18.5%), diabetes1(3.7%), hypertension 1(3.7%) cancer 2 (7.4%) heart disease 1(3.7%) and others 4(14.8%).

Drug and alcohol abuse was the commonest adolescent health and social problem reported by 525(72.0%) heads of household. This was followed by teenage pregnancy reported by 450 (61.7%) heads of household, violence reported by 291(39.9%), risky behaviour reported by 281 (38.5%) arguments with parents reported by 232(31.8%) and HIV/STI reported by 79 (10.8%). In addition, during the key informant interviews prostitution was ranked by key informants and opinion leaders or elders within the community as the most important problem of adolescents, however it was ranked the least by the adolescents who instead ranked violence as their most important problem (Fig.5 and Fig. 6).

About a third of the adolescents, 75 out of 219 (34.3%) adolescents, admitted to alcohol use. Use of recreational drugs was reported by 15 out of 207 adolescents, (7.3%), whereas cigarette smoking was reported by 9 out of the 228 respondents (3.9%). In all 197(97.0%) out of 203 adolescent reported that they engaged in some form of physical activity. The

spatial distribution of adolescents who reported alcohol consumption has been presented together with GIS maps showing areas of concentration of anti-social behaviour constructed with key informants (Fig.7 and Fig. 8). Leaflets were distributed and a drama was performed by the students to illustrate the effects of these social issues during a feedback session with the community.

Some limitations were encountered during the study. Not all the questions received the expected number of responses as some adolescents declined to answer them and were free to do so. It was also not clear whether those who reported that they had Asthma had been medically diagnosed with the condition. We did not include an option for respondents to choose a febrile condition and expected it to be reported as other diseases but we did not find such a report.

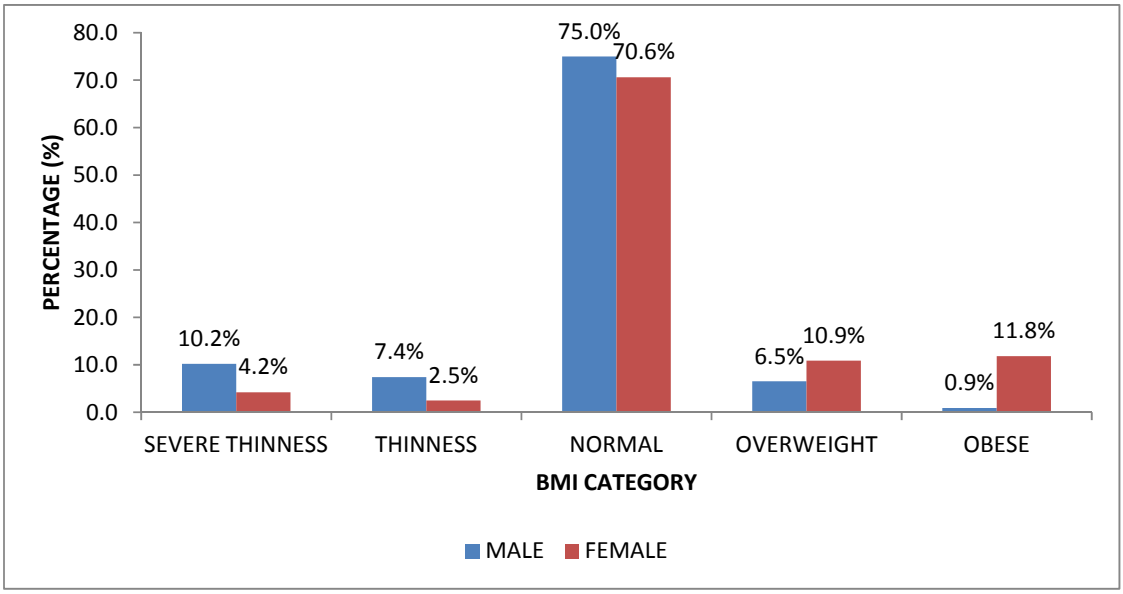

Fig 3. Distribution of the body mass index of 228 adolescents of

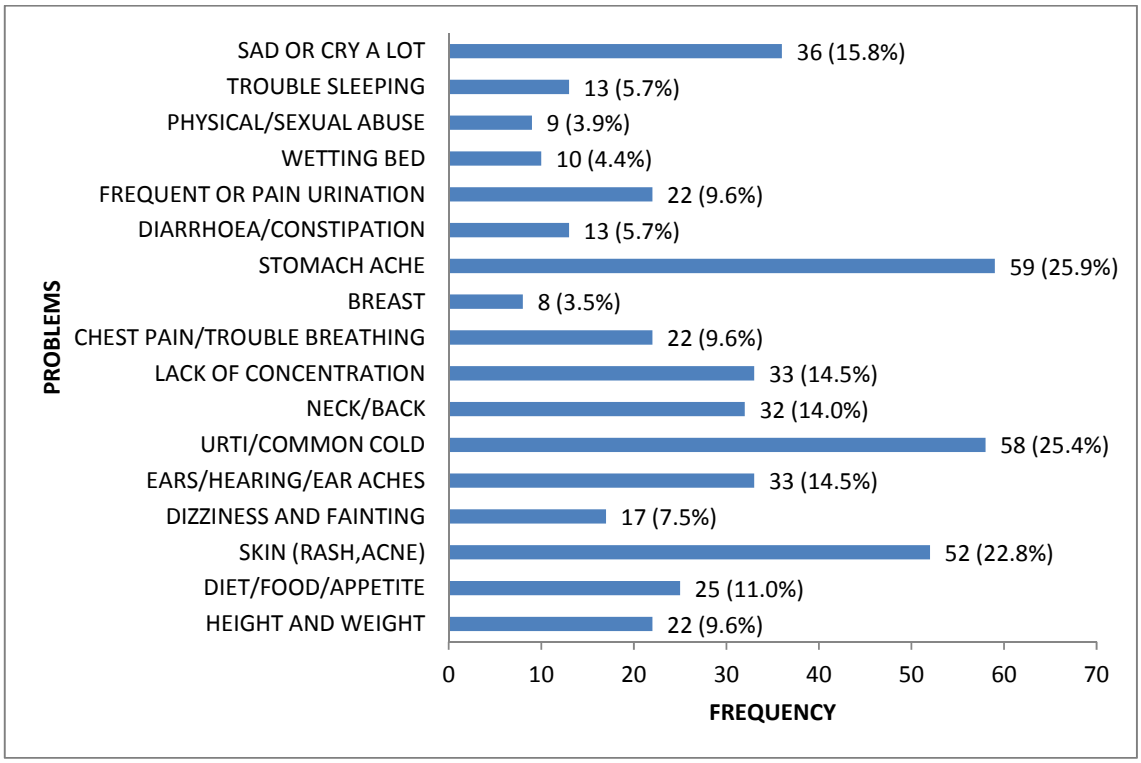

Fig 4. Frequency distribution of health problems reported by 228 adolescents

	DRUG ABUSE	TEENAGE PREGNANCY	SCHOOL DROPOUT	VIOLENCE	PROSTITUTION
DRUG ABUSE		TEENAGE PREGNANCY	SCHOOL DROPOUT	VIOLENCE	DRUG ABUSE
TEENAGE PREGNANCY			SCHOOL DROPOUT	VIOLENCE	TEENAGE PREGNANCY
SCHOOL DROPOUT				VIOLENCE	SCHOOL DROPOUT
VIOLENCE					VIOLENCE
PROSTITUTION					

Fig 5. Pairwise ranking matrix showing the problems of adolescents in Korle Worko reported by adolescents in the community

	TEENAGE PREGNANCY	DRUG ABUSE	SCHOOL DROPOUT	VIOLENCE	PROSTITUTION
TEENAGE PREGNANCY		DRUG ABUSE	SCHOOL DROPOUT	TEENAGE PREGNANCY	PROSTITUTION
DRUG ABUSE			DRUG ABUSE	DRUG ABUSE	PROSTITUTION
SCHOOL DROPOUT				SCHOOL DROPOUT	PROSTITUTION
VIOLENCE					PROSTITUTION
PROSTITUTION					

Fig 6. Pairwise ranking matrix showing the problems of adolescents in Korle Worko reported at a group discussion with opinion leaders in thecommunity

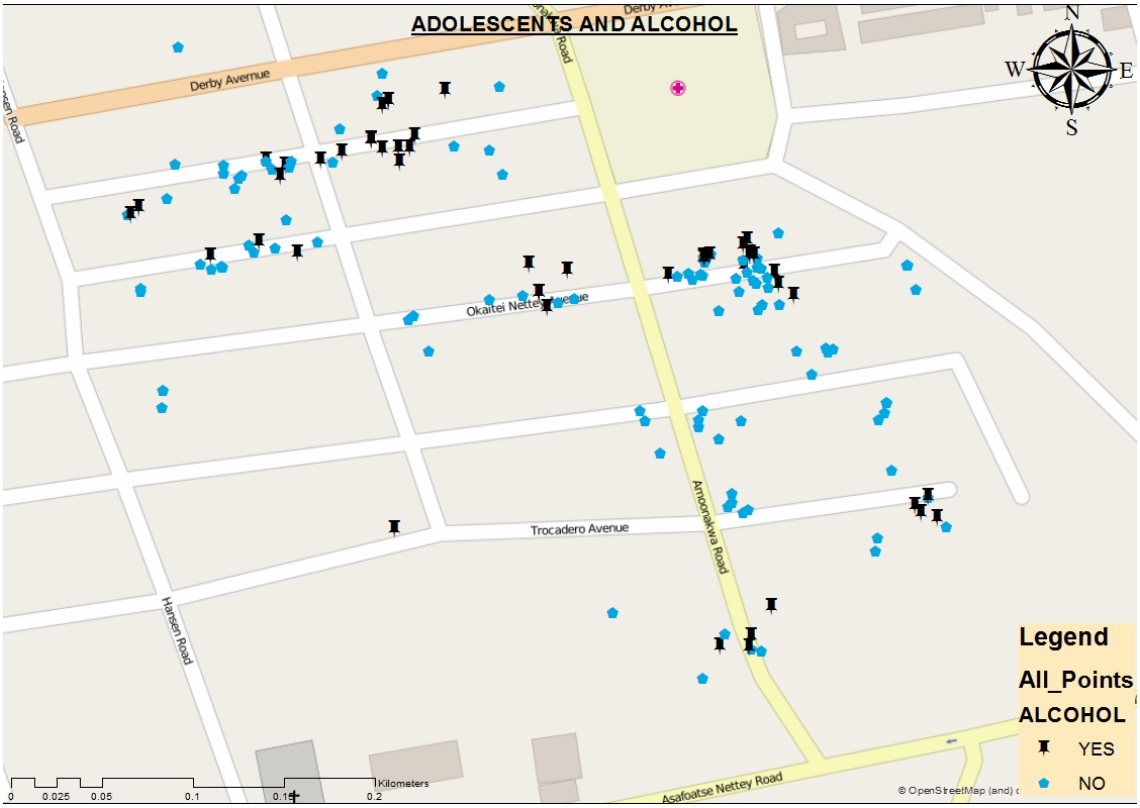

Fig 7. Geomap of adolescents drinking pattern

Fig 8. Community mapping to show the concentration of some social vices

The survey showed that close to a fifth of female adolescents in this study were either overweight or obese while approximately one sixth of the males were underweight. Both under and over nutrition are recognised health problems affecting adolescents.[1,2,3] Furthermore, the females were found to be more at risk of obesity than the country in general.[7] Since obesity in adolescence is likely to lead to obesity in adulthood, this observation is worrying.[14] Therefore effort must be made to curb the condition. The Children's hospital is known for its success in nutritional rehabilitation of children under five year olds. It can be supported to become a place for nutritional interventions in adolescents. In the meantime, the adolescent centre and schools health service should intensify their efforts at promoting healthy eating behaviour and at the same time identify and treat adolescents who are under or overweight.

The six most commonly reported health complaints of adolescents were stomachache, common cold, skin rashes, feeling sad or crying a lot, lack of concentration and hearing problems or ear ache (Fig. 4).The chronic diseases reported also showed a preponderance of respiratory diseases such as Asthma. A study of autopsies at the premier teaching hospital in Accra, showed that both communicable and non-communicable diseases were important causes of death in adolescents.[15] Pneumonia and typhoid fever were the common infections whereas sickle cell disease, and other blood diseases, neoplasms, injuries, and pregnancy related causes were among the major non-communicable diseases in that study.[15] A study on adolescent deaths in children admitted to the children's hospital (PML) also found that adolescent deaths were few, however malaria, anaemia, HIV infection, sickle cell disease and meningitis were the most common associated diseases.[16]

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The common cold or upper respiratory tract infection is a common reason for outpatient attendance in Ghana.[17] The study area is located in the business district of the capital, which is full of vehicular traffic during the day so it is possible that air pollution may be contributing to the preponderance of respiratory diseases among these adolescent.[18] Further studies are needed confirm such a link as well as a link with earache and hearing problems which were also common. Since pneumonia is often preceded by a cold or upper respiratory tract infection, it is important that adolescents are educated about the symptoms so they can be treated early if it occurs. The term "stomach ache" is commonly used to indicate abdominal pain in Ghana, The reason for the high incidence of "stomachache"is not known. It could be due to intestinal worms, food poisoning, diarrhoea diseases, typhoid fever, constipation, menstrual pain, surgical or non-organic causes and thus it needs to be

examined further as it may provide useful information to generate a protocol for managing such complaints locally.[19.20]

Feeling sad or crying a lot and bed wetting were also prominent alluding to the importance of behavioural or mental health problems in this setting. The need for psychosocial support during adolescence is well-documented due to the risk of depression and suicide in this age group.[2,3] Developing strong family ties, building life skills, receiving support and community programmes can mitigate this problem.[1,2] The adolescent health centre offers counselling services. Nevertheless this service can be expanded to include a computer room, educative programmes, games and other recreational programmes for adolescents. It is also important to find out whether the adolescents actually accessing the counselling service there and to consider broadening the services to include enuresis management. The latter can also be done through the school health system as occurs in other settings.[21]

Lifestyle-related risk factors for communicable and non-communicable diseases were reported to be prevalent in the community. Drug and alcohol abuse, teenage pregnancy, violence and prostitution were among the social problems reported.[1,2,3] Compared to a similar report from Ghana, adolescents at Korle Worko of both sexes used more alcohol and were at medium risk.[14] The pattern of alcohol use among adolescents (Fig. 7) was similar in pattern to the spatial distribution of social vices like drug abuse in the community (Fig. 8). This suggests that adolescent risky behaviour may be influenced by antisocial behaviour in the community at large. A similar observation has been made by other researchers.[22] Consequently, efforts to address the problem should not only focus on the adolescent but also on the other social vices and the adults who engage in them.

Sexual promiscuity in the form of prostitution was reported to be a significant problem of adolescents in the pair wise ranking matrix by the opinion leaders. However, prostitution was not viewed as a major problem by the adolescents so this requires further study. The convention on the rights of child engenders society to listen to adolescents on matters relating to their health.[23] Since parents and guardians, family, schools, community members and religious leaders also play a significant role in guiding adolescents, their views also matter. However, it is important to seek both views and create an opportunity for dialogue when seeking solutions since they may differ. Nonetheless, sexual promiscuity is a well-recognised risky behaviour among adolescents and it puts them at risk of teenage pregnancy and sexually transmitted infections such as chlamydia, gonorrhoea and HIV/AIDS.[2,24]. The occurrence of sexually transmitted infections (STI) is further suggested by the reporting of increased frequency and painful urination by 9.6% of the adolescents.

Services to manage STI's are available at the adolescent health centre, the outpatients and children's hospital. Education on the subject should also be ongoing in schools and the community.

Community diagnosis is a useful educational tool for introducing medical students to research and the community, as it has several benefits.[12,13,25] It enables students to learn how to gather and critically appraise health and social data, identify health problems, generate solutions, interact with the community and suggest ways of improving their health.[25,26] An appraisal of a similar project recommended the use of more participatory research methods and GIS to improve the learning experience in subsequent surveys as is done elsewhere.[26, 27,28] . It also called for increasing student participation in problem solving to increase the benefits of the exercise to communities.[26,29.] This survey provided an opportunity for students to do this. The students were taught to obtain GIS co-ordinates, construct GIS maps and use more participatory research methods. A song, a rap and drama on adolescent health issues created by the students using principles of health education were staged during feedback to the community at a durbar. Leaflets and posters were also made and distributed. A member of our staff was tasked to continue to support the adolescent centre through health promotion. Additionally, the department initiated steps to invite UNFPA to partner with the centre to address adolescent health problems in the sub-metropolis. The UNFPA organised outreaches with the department's involvement, and made renovations to the centre which were commissioned in 2019.

Student participation in problem solving at community level is often limited by resources and time constraints as their rotations are usually time bound.[26] This example demonstrates that with some guidance, it is possible to contribute solutions using modest resources, creativity and innovation. We have replicated some of this in other community projects including providing reports that have enabled communities to obtain much needed infrastructure. We hope to add activities such as health screening in future. Since universities are partly rated by the positive impact they exert on communities, community diagnosis by medical students can be seen as one of the avenues for achieving this as others have done.[30]

1. CONCLUSION

Both communicable and non-communicable diseases particularly, respiratory conditions were reported as prominent health problems among these adolescents. Over and under-nutrition as well as mental health problems were also prominent. Although the area is well endowed with health services to address these issues, they may need to be expanded and

reoriented to target specific conditions such as nutrition in adolescence, respiratory diseases and mental health problems. Efforts at addressing the lifestyle related issues should also target the areas of influence within the community. Further investigation of the pattern of use of the services available to adolescents, risk factors for respiratory diseases and the causes of stomach ache are required. Community Diagnosis if used this way can become a useful tool for providing exposure as well as solutions to global health issues affecting communities in Ghana and elsewhere.

5.0 ACKNOWLEDGEMENT

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6.0 **COMPETING INTERESTS**

We declare that there is no competing interest.

ETHICAL APPROVAL

Community entry was done and permission to carry out the survey was obtained from the Assemblyman at the time, Mr Alfred Nii Kortey Ashie who sought permission from the traditional authorities on behalf of the department. Written consent was obtained from the heads of household before the questionnaires were administered and adolescents also gave verbal permission to be interviewed.

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