

CHALLENGES EXPERIENCED BY HEALTHCARE PROVIDERS WITH REGARD TO THE PROVISION OF SCHOOL HEALTHCARE SERVICES IN TSHWANE SUB-DISTRICT, GAUTENG PROVINCE

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ABSTRACT

Children of school-going age are faced with multiple challenges that need professional interventions from educators and healthcare providers. This study sought to explore and describe the challenges experienced by healthcare providers with regard to the provision of school healthcare in the Tshwane sub-district, Gauteng Province. A qualitative, descriptive phenomenological design was used because of its holistic and contextualised nature. The population consisted of healthcare providers who were working in collaboration with the school health nurses, as well as being members of the community. These participants were conveniently and purposefully selected. Twenty-two healthcare providers were selected. Data were collected through the use of individual interviews until data saturation was attained. The interviews were based on the question: *“What are the challenges you experience as healthcare provider regarding the provision of school health services in the Tshwane sub-district, Gauteng Province?”* Researchers followed the adapted Colaizzi’s method (1978) of data analysis in Polit and Beck (2012). All transcripts were read repeatedly and the data was reviewed, coded and categorised into the sections applicable to the problem statement. From the challenges experienced three main themes evolved by health care providers and these included: the need for early and frequent school health visits, the lack of collaboration in school health

programmes, and insufficient care provided to HIV positive children of school-going age. It was evident that the challenges school health service providers faced included limited resources, inconsistency in existing school health service rendering, and poor collaboration between the stakeholders involved. These challenges create a major barrier for the delivery of school health services in South Africa. The participants recommended that partnerships and collaboration should be established in order to establish a healthy educational environment and promote frequent and sustained school visits.

KEYWORDS: challenges, health care providers, school health services, experiences, interventions.

INTRODUCTION AND BACKGROUND INFORMATION

Children of school-going age are faced with multiple challenges that need professional interventions from educators and healthcare providers as outlined by Mulaudzi and Peu (2014:1). These challenges relate to social and economic issues. Due to the HIV/AIDS epidemic, many school-aged children are orphaned and live with guardians or grandparents. Thus parental absence exposes many school-going children to a poor primary education, which in turn leads to a lack of parental guidance with regard to good nutrition, prevention of teenage pregnancy and HIV/AIDS. Children of school-going age, some in the secondary school age-group, engage in early sexual debut. Sexual debut for some children starts as early as 12 years (Simbayi, Shishana, Rehle, Zuma, Jooste, Zungu, Labadarios & Onoya 2014:13).

Specifically school-going females are at a high risk of contracting HIV/AIDS as many engage in high risk sexual behaviour such as transactional or intergenerational relationships because of poverty (Kuate-Defo, 2004:13; Nkosana & Rosenthal, 2007:182; Luke, 2005:6; Makiwane & Mokomane, 2010:18). According to Simbayi et al. (2014:13), most determinants of HIV transmission observed among adolescents include early sexual debut, multiple sexual partners and poor condom use. The provision of reproductive healthcare would reduce factors that render this school-going age group vulnerable to teenage pregnancy and HIV/AIDS. To provide care to children of school-going age, the Department of Health (DoH) and Department of Basic Education (DBE) (2012) included in their objectives and interventions reproductive healthcare promotion as one of the services to be provided under the Integrated School Health Policy (ISHP).

In 2012 a national survey estimated the overall HIV prevalence among South Africans at 12.2%. The HIV prevalence of children aged 0–14 was 2.4%, and among adolescents between the ages 15 to 24 year old, was 7.1% (Simbayi et al., 2014:35-36). Some of these children were infected through mother to child transmission

of HIV during infant age, through breastfeeding. According to the Millennium Development Goals (MDG) report (2013:62), South African child mortality rates have been affected negatively by HIV/AIDS. The MDG report reflects that some children of school-going age who have been diagnosed with HIV/AIDS need food security to ensure compliance to ARTs. School-going children who are HIV positive require support to remain asymptomatic and comply with antiretroviral therapies (ARTs). It is of the utmost importance to engage community members to work hand in hand with school healthcare providers to support school-going children's adherence to ART regimens. Furthermore, these children need adults to supervise the taking of medication and possible onset of side effects. ARTs are known for their side effects that may lead to non-compliance. These children need balanced nutrition, support to learn at home, and protection from physical, emotional and social injustices and harm. As "it takes a village to raise a child", it is the responsibility of the community structures (which includes health professionals and the family) to provide care to school-going children (Mulaudzi & Peu, 2014:2). The collaboration of healthcare providers in structures such as a Community of Practice (CoP) is documented as having yielded positive outcomes (Peu, Mataboge, Chinouya, Jiyane, Rikhotso, Ngwenya & Mulaudzi, 2014:548).

In keeping with the multiple issues of adolescent sexual behaviour and health challenges, a number of preventative interventions have been instituted in South Africa. These include school-based sex education, peer education programmes, adolescent friendly clinic initiatives as well as the use of mass media. School health programmes are seen as a means to address the country's major health challenges such as HIV, maternal and child health, and sexual and reproductive health (South African Demographic and Health Survey [SADHS], 2014:76). The Departments of Health and Education jointly initiated and developed a new school health policy that was launched as the ISHP in 2012 (Department of Health & Department of Basic Education (DoH & DBE) 2012). The ISHP includes several health service interventions comprising health screening assessments, promotion of health and preventative interventions such as vaccinations, environmental health assessments of schools, and HIV and sexual health education (DoH & DBE, 2012:14).

In school, education on sexuality became compulsory in South Africa in 1996 and it was incorporated into the subject, Life Orientation. Akpabio, Asuzu, Fajemilehin and Ofi (2009) found that in Nigeria education on sexuality and HIV in schools improved adolescents' attitudes towards HIV/AIDS. To improve the health of school-aged children, it is essential for the school health services to be enhanced through the collaboration of all stakeholders, namely, the educational institutions, parents in the community, non-governmental organisations, primary healthcare services as well as youth friendly services.

STATEMENT OF THE RESEARCH PROBLEM

It seems to be that healthcare providers experience some challenges with regard to the provision of school healthcare in the Tshwane sub-district, Gauteng Province.

Lack of resources including manpower and infrastructure impact drastically on the provision of the integrated school health services to learners. Although the ISHP (DoH & DBE, 2012:14; Mulaudzi & Peu, 2014:1) has been implemented, there are still a number of concerns about the school health programme providers. Healthcare providers reported that resources to ensure sustained provision seemed to be lacking. Visits by healthcare providers who accompanied student nurses for clinical experiential learning brought to light that school health nurses only visit schools once a year. There are also a limited number of nurses to visit the schools which, in turn, impacts on the role of the school health team.

There is inadequate re-engineering of primary healthcare (PHC) interventions in schools. This re-engineering process is necessary to provide school-going children with knowledge on how to prevent early sexual debut and related health risks as a component of the school health programme on sexual and reproductive health. Additionally, there is lack of partnership in the provision of health services to children of school-going age which later leads to poor delivery of school health programs. Despite the fact that community participation is a component of primary healthcare (PHC) services, communities remain distant from school health services.

RESEARCH PURPOSE

This study sought to explore and describe the challenges experienced by healthcare providers with regard to the provision of school healthcare in the Tshwane sub-district, Gauteng Province.

SIGNIFICANCE OF THE STUDY

It was proposed that the findings of this research would provide more insight into the challenges experienced by healthcare providers providing school healthcare. The researchers believed that by determining the barriers associated with the delivery of school health services in the Tshwane sub-district, Gauteng Province, South Africa, the major challenges could be successfully addressed to improve health service delivery to school-going children in this sub-district, thereby bettering the health status of this age group. Lastly, the findings will serve as the basis for planning for school health interventions.

RESEARCH METHODOLOGY

A qualitative, descriptive phenomenological design was used. A phenomenological study was chosen because of its holistic and contextualised nature (Polit & Beck, 2012:565). This is a research approach relating to what people experience (Polit & Beck, 2012:495). Using this design would allow for obtaining rich and diverse descriptions from the participants thus bringing more clarity to healthcare providers on how to understand and address the phenomenon.

Target population

The population consisted of healthcare providers as nurses who were working in collaboration with the school health nurses, as well as being members of the community. These participants were conveniently and purposefully selected. Twenty-two healthcare providers were interviewed. The participants included healthcare providers who were working with school health nurses. The selection of participants was based on their knowledge about the school health services.

Data collection

Data were collected through the use of individual interviews until data saturation was attained. The interviews were based on the question: “What are the challenges you experience as healthcare provider regarding the provision of school health services in the Tshwane sub-district, Gauteng Province?” Each participant’s response was facilitated by active listening, further probing and by paraphrasing responses and interviews took an average of 40 minutes. With permission of the participants data was recorded and transcribed verbatim. It took approximately three weeks to collect the data.

Data analysis

Researchers followed the adapted Colaizzi’s method (1978) of data analysis as outlined by Polit and Beck (2012:565). All transcripts were read repeatedly and the data reviewed, coded and categorised into the sections applicable to the problem statement. The leading themes were identified and described. Subsequently, the findings were interpreted, formulated and disclosed to the participants for validation (Polit & Beck, 2012: 566).

Ethical considerations

Permission to conduct the study was obtained from the Ethics Committee of the Faculty of Health Sciences, University of Pretoria, no.75/2012. The principles of

ethics such as beneficence, justice and respect for human dignity were adhered to (Polit & Beck, 2012:154). Consent for participation was negotiated and signed. During data collection the participants were offered freedom from any harm or discomfort. They were fully protected against any exploitation. The participants were respected through the use of codes instead of using their names during the process of research. Participants were allowed to withdraw from the study at any time for any reason. They were all treated like unique individuals especially regarding the selection procedure (Polit & Beck, 2012: 155).

Trustworthiness

The four criteria of trustworthiness were upheld. Credibility was ensured by prolonged engagement and triangulation (Polit & Beck, 2012:175). The researchers spent almost three weeks in the research setting. A total of 22 semi-structured individual interviews were conducted and some interviews lasted for an hour. The research setting was triangulated as two district hospitals, primary health settings and wellness clinics were included. Dependability and transferability were assured by providing thick descriptions of the design and methods implemented (Burns & Grove, 2009) so that the readers could deduce the truth. The researchers reported the results using the exact words said by participants. A trail of evidence ensured confirmability.

RESULTS

From the challenges experienced by healthcare providers, three main themes evolved which included: the lack of early and frequent school health visits, the lack of collaboration in school health programmes, and insufficient care provided to HIV positive children of school-going age. Verbatim quotations are used to verify each theme.

The lack of early and frequent school health visits

Although the ISHP outlines the implementation of a school health promotion programme, the visits by the school health team are few. As such they did not address the health factors affecting the school children. A participant commented on the lack of continued and consistent visits by the school health nurse:

They said a school health nurse only went there once, and they never saw her again ... Now that you are explaining, suddenly this comes to my mind that the visit to these areas is too late when the people have already engaged and contracted HIV and AIDS.

The following response from one of the participants indicates concern about the health nurse's infrequent visits which demonstrated the lack of school health services:

The school health nurse only went there once, and they never saw her again. Infrequent school visits. This is why I say to you that the frequency of visiting the school is very poor. The school health nurse last went to the schools on the 24th January 2013. The school health nurse should be rendering the service without any problems, but there are no services.

Another participant verified the previous statement by saying:

I don't know how it can be done that there can be frequency of visiting these schools. Another thing is that, what I think as the big challenge is that the school health in this area is very poor. When I remember very well, the school health nurse last went to the schools on the 24th January 2013. We used to come with the students at these schools and render the services.

One participant expressed distress about people that were no longer willing to do school nursing and revealed the following:

I truly don't know (with a faint baby voice). Maybe there are no longer people who want to visit the schools. But I do know that there are transport problems in the government sector. I don't know with the private sector, but it is the big problem with the government sector.

The participants were troubled by the inconsistency with which the school health nurses visited the schools – only once in a specified timeframe. Some speculated on the reasons why visitation for health promotion in schools is so poor in the government sector. Factors such as the lack of transport or loss of interest in visiting schools were mentioned.

The lack of collaboration in school health programmes

School health programmes should be ongoing programmes conducted by healthcare providers in collaboration with multidisciplinary teams. The main focus should be on the assessment of the health-related needs of schoolchildren. Such team assessments should include identifying the current health problems, and emphasising the necessity to implement health programmes in collaboration with all the parties involved. The implementation of the school health programme has been incorporated into the PHC package. Healthcare providers have identified a range of issues impacting on the provision of quality services. One was the lack of collaboration to ensure the provision of a primary prevention programme. Participants explained how they conducted the school health programmes for HIV/AIDS and sexually transmitted diseases regarding ongoing collaboration as:

But for this year we had the meeting with the Sexual Reproductive Health (SRH) CoP who explained the high rate of pregnancies in the schools, so they want us to work together collaboratively in schools in order to combat these high rates of pregnancies, prevention of HIV/AIDS and STIs. So, we are having a planning meeting where we are going to plan awareness campaigns.

Limited resources are one of the most challenging factors in the delivery of school healthcare services due to lack of collaboration with other health sectors or departments. If resources are limited, service delivery is easily affected negatively as expressed in the next quote:

There are no resources available. We used to come with the students at these schools to render these services. There are no longer people who want to visit the schools. Nurses who were working with the school health nurses complained so much ... that they have such a lot of paper work ... they still want to write whatever reports and at the end of the day forget to contact us.

Collaboration is the strategy that enhances speedy school healthcare service delivery. If collaboration is poor, the whole school as a system is affected. The participants in this study attested that communication among school health providers and teams was non-existent:

There is no communication between you and the nurses or other people working with the students.

The insufficient care provided to HIV positive children of school-going age

Taking part in unsafe sexual practices exposes males and females to become infected with HIV/AIDs and other sexually transmitted infections (STIs). According to some participants, many school-going children, especially females, lack knowledge on how HIV is contracted and spread. One participant expressed concern about female schoolchildren who have sexual relationships with older male partners who may be HIV positive as follows:

There are children who are in love with sugar daddies (older men) in order to get some money to survive at home, and we all know that they are at risk of contracting HIV/AIDS and other STIs. So we are planning to meet them as soon as possible. Apart from the school principals, that is another plan (meeting with the female children) that we are having with the two areas for this year.

If children of school-going age do become HIV positive, adhering to ART is difficult because many come from impoverished households; they go without food and without guidance on how to take their medication. This is supported by the next quote:

It is quite difficult because some students (school-going children) are on ARVs and they do not have enough food. We all know that you cannot take treatment without eating.

Another participant explained providing care for HIV positive children included being given food parcels from school feeding programmes (a collaborative effort between the community and healthcare providers mentioned by a participant) to ensure the optimal uptake of ARTs:

No, it was a shock to us. We knew that there are children who are infected with HIV but we did not know that they don't have food to eat. You'll find that at home they are either staying with their grannies because the mother deserted them for their HIV status. So in one school they identified them and prepared food parcels for them to eat at home for the evening. In the morning they prepare food for them to eat and drink with their ARVs.

However, such a collaborative effort to meet the nutritional needs of an HIV positive child and the implementation thereof, is a sensitive issue as it may label the child. When children receive food parcels at school it may compromise the involuntary disclosure of their status as verified by the following quotes:

When carrying the food home, you are telling the world that I don't have food at home and I am taking ARVs.

With the children there is no confidentiality. Even for their friends, even if they try to hide their status but the food parcel labels them.

It is possible that some schoolchildren who would benefit from food supplies may become reluctant to collect food parcels to take home. Therefore, including all children in the school in a feeding programme instead of only those who need it when taking ARTs, would be the best approach.

DISCUSSION OF RESULTS

Improving school health services is required if the health sector is to re-engineer and strengthen PHC. Through the use of school health services children of school-going age would be able to access healthcare. Mason-Jones et al. (2012:1) reported that school-based healthcare enables the identification of vulnerable children who need support and care. According to the Competency in School Nurse Practice in Connecticut State (Coranson, 2009:8), school nurses have to be competent and proficient in their work and have to plan for students' and school community health needs. The current participants reported that the school nurses did not visit the schools consistently even though the South African Integrated School Health Policy (DoH & DBE, 2012) states that the schools in disadvantaged areas should be visited frequently.

Participants complained that school health nurses visited schools only once in a specific timeframe; yet, it is required and obligatory for the government to provide adequate healthcare facilities which include nurses for school health services. In the ISHP Policy (DoH & DBE, 2012:10) it is clearly stated that the policy forms

part of the comprehensive primary healthcare package which operates within the DBE framework. In contrast to this stipulation, the current results have revealed that nurses visit schools irregularly and inconsistently.

The participants recommended that the school health nurses should render services without difficulties. In their study on “Communal child-rearing: The role of nurses in school health”, Mulaudzi and Peu (2014:7) reiterated that nurses are to be involved in implementing and evaluating school health policies which impact on school health services.

The results indicated that collaboration is needed between school health and nurses. Even though schools were visited, the health talks focused only on love and Life Orientation (HIV/AIDS included), but with no depth or details given. According to the Integrated School Health Policy (DoH & DBE, 2012:3, 11), immediate health problems of learners are expected to be met through the integrated school health programme. However, it appears that healthcare providers were only focussed on meeting with other stakeholders and collaborating with schools to combat teenage pregnancies through awareness campaigns. Mason-Jones et al. (2012:9) asserted that for the school-based health services to function and be accepted by the communities, it is important to also assess any resistance to the services.

Graves, Sentner, Workman and Mackey (2011) report that in response to the epidemic of teenage pregnancy, the ‘Smart Girls Life Skills Training’ (Smart Girls) programme in the North Carolina was initiated. However, the initial evidence showed that the programme was only partially successful in changing the personal sexuality and parent-adolescent communication of middle-school girls. The ISHP emphasises the teaching of Life Orientation. This should be supplemented with additional co-curriculum or school-based skills. The school-based skills include sexual and reproductive health, teenage pregnancy and choice of termination of pregnancy (TOP) as well as sexually transmitted infections (DoH & DBE 2012:3;11). Therefore, there should be collaboration during the implementation of the above programmes.

Collaboration in school health remains the cornerstone for better education where teaching and learning occurs. Here healthcare providers, educators, learners and the community members learn to share and transfer information thereby furthering their development and empowering themselves. Mulaudzi and Peu (2014:4) state that school services motivate the school to develop and implement the school policies that will promote and sustain a healthy environment. The authors further articulate that children should be taught in a conducive social environment. Learners will complete their scholastic education, their learning capacity will be improved and they will stay healthy (Mulaudzi & Peu, 2014:4). Additionally, the school health service is one of the components of PHC and it should be available, affordable and attainable at all times.

Good nutrition is essential for maintaining good health. School health programmes such as education on nutrition and feeding programmes are necessary

to promote good nutrition among children, especially those on ARTs. According to Weiser, Palar, Frongillo, Tsai, Kumbakumba, Hunt and Bangsberg (2014) studies have shown that food supplementation at the clinic can lead to improved and consistent ART usage and clinic attendance. However, the authors advised that larger studies need to be conducted to measure the treatment response. In addition, it was found that food insecurity was highly prevalent among HIV infected individuals in rural Uganda. This was associated with less successful ART adherence as well as less successful virological and immunological outcomes (Weiser et al., 2014:119).

One in every three (33.7%) sexually active adolescent girls was involved in an age-disparate sexual relationship with a sexual partner more than five years older (UNAIDS, 2014:34). Meanwhile, the HIV/AIDS infection rate was as high as 4.3% among females in comparison to 1.5% among males of 15-24 years (Boonstra, 2007:3). This increases the risk to contract HIV even more. The author adds that the 15-24 age group is considered by UNAIDS as an extremely vulnerable group and are under a high threat of contracting HIV/AIDS. Therefore, secondary and tertiary prevention programmes are needed. The children who are on the programme should be visited at their homes to review their health progress. In this study food parcels provided to HIV positive school-going children created labelling similar to that which occurs when community-based workers visit the homes of HIV patients.

CONCLUSION

It was evident that the challenges which school healthcare service providers faced included limited resources, inconsistency in existing school health service rendering, inadequate HIV services and poor collaboration between the stakeholders involved. These challenges create a major barrier for the delivery of school health services in South Africa. However, they can be successfully addressed if effective collaboration among all the stakeholders is established.

RECOMMENDATIONS

Based on the challenges identified, the researchers recommended that adequate provision of resources should be provided as stipulated by the IHSP (DoH & DBE, 2012:17-18). The participants further recommended that partnerships and collaboration should be established as early as possible to establish a healthy educational environment and promote frequent and sustained school visits. A programme that will raise awareness among school-going children about the risks of being involved with older males in sexual relationships need to be developed in collaboration with all stakeholders, including the school children and their partners. The effects of labelling need to be addressed by extending food parcels to all needy children, even those who are not receiving ARTs. Funding to sustain the programme also need to be raised.

LIMITATIONS OF THE STUDY

The study was only conducted in one area with a limited number of healthcare providers. Therefore, the results cannot be generalised to all healthcare providers in the Tshwane district.

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REFERENCES

- Akpabio, I. I., Asuzu, M. C., Fajemilehin, B. R. & Ofi, A. B. 2009. Effects of school health nursing education interventions on HIV/AIDS-related attitudes of students in Akwa Ibom State, Nigeria. *Journal of Adolescent Health*, 44(2):118-123.
- Boonstra, H. 2007. Young people need help in preventing pregnancy and HIV; How will the world respond. *Guttmacher Policy Review*, 10(3): 2-8.
- Burns, N. & Grove, S.K. 2009. *The practice of nursing research: appraisal, synthesis, and generation of evidence*, 6th Edition. St. Louis, MO: Elsevier Saunders.
- Coranson, D.G. 2009. Competency in school nurse practice. Connecticut State: Department of Education. <http://www.ct.gov/sde/cwp/view.asp?q=2678&=320768>
- Graves, K. N., Sentner, A., Workman, J. & Mackey, W. 2011. Building positive life skills the Smart Girls Way: Evaluation of a school-based sexual responsibility program for adolescent girls. *Health promotion practice*, 12(3): 463-471.
- Kuate-Defo, B. 2004. Young people's relationships with sugar daddies and sugar mummies: what do we know and what do we need to know? *African Journal of Reproductive Health*, 8(2): 13.
- Luke, N. 2005. Confronting the 'sugar daddy' stereotype: Age and economic asymmetries and risky sexual behaviour in urban Kenya. *International Family Planning Perspectives*, 31(1): 6.
- Makiwane, M. & Mokomane, Z. 2010. South African youths' higher-risk sexual behaviour: An eco-developmental analysis. *African Journal of AIDS Research*, 9(1): 17-24.
- Mason-Jones, A. J., Crisp, C., Momberg, M., Koech, J., De Koker, P. & Mathews, C. 2012. A systematic review of the role of school-based healthcare in adolescent sexual, reproductive, and mental health. *Systematic Reviews*, 1(1): 1-13.
- Millennium Developmental Goal report. 2013. Country Report 2013: The South Africa I know: the home I understand. Republic of South Africa. Pretoria:Government Printers.
- Mulaudzi, F.M. & Peu, M.D. 2014. Communal child-rearing: The role of nurses in school health. *Curationis*, 37(1): 1-7.
- National Department of Health and National Department of Basic Education. 2012. Integrated School Health Policy. Pretoria:Government Printers..

- Nkosana, J. & Rosenthal, D. 2007. The dynamics of intergenerational sexual relationships: The experience of schoolgirls in Botswana. *Sex and Health*, 4(3): 181-187.
- Peu, M.D., Mataboge, S., Chinouya, M., Jiyane, P., Rikhotso, R., Ngwenya, T. & Mulaudzi, F.M. (2014). Experiences and challenges of an interprofessional community of practice in HIV and AIDS in Tshwane district, South Africa. *Journal of Interprofessional Care*, 28(6): 547-552.
- Polit, D.F. & Beck, C.T. 2012. *Nursing research: generating and assessing evidence for nursing practice*, 9th Edition. Philadelphia: Lippincott Williams & Wilkins Co.
- Simbayi, L. C., Shisana, O., Rehle, T., Onoya, D., Jooste, S., Zungu, N. & Zuma, K. 2014. South African national HIV prevalence, incidence and behaviour survey. 2012. Pretoria: Human Sciences Research Council. Available at http://heads.org.za/site/assets/files/1267/sabssm_iv_leo_final.pdf (accessed on 6 June 2015).
- South African Demographic and Health Survey (SADHS). 2014. Available at <http://www.gov.za/documents/south-african-demographic-and-health-survey-sadhs>
- UNAIDS. 2014. Joint United Nations Programme on HIV/AIDS. The gap report. Geneva WHO.
- Weiser, S. D., Palar, K., Frongillo, E. A., Tsai, A. C., Kumbakumba, E., Hunt, P. W. & Bangsberg, D. R. 2014. Longitudinal assessment of associations between food insecurity, antiretroviral adherence and HIV treatment outcomes in rural Uganda. *AIDS*, 28(1): 115-120.