ORIGINAL RESEARCH ARTICLE

Perceived opportunities and challenges of family and community members in supporting teen mothers in rural Eastern Uganda

DOI: 10.29063/ajrh2020/v24i3.10

Josephine Nabugoomu[1], Gloria K Seruwagi[2], Kitty Corbett[1], Susan Horton[1], Rhona Hanning[1]*

University of Waterloo, Ontario, Canada, 200 University Avenue West, Waterloo, Canada. ON N2L 3G1[1]; Makerere University School of Public Health, Kampala P. O. Box 7062, Kampala, Uganda[2]

***For Correspondence:** Email: *rhanning@uwaterloo.ca*; Phone: +1-519-888-4567

Abstract

There is tremendous need for feasible and acceptable community-based interventions to address poor nutrition and health among teen mothers in rural Eastern Uganda. To inform such interventions, we identified facilitators/opportunities and challenges for maternal/child nutrition and health at community level, as perceived by those closest to the problem. In-depth interviews were conducted among 101 teens, family and community members in Budondo sub-county using questions based on social cognitive theory constructs related to nutrition/health. Data were analyzed thematically using Atlas-ti7.5.4. Facilitators included family support for positive teen decision-making regarding healthcare and practices and opportunities included income generation training and availability of healthcare services. Challenges included poor attitude of parents towards community workers, harsh treatment, inability to obtain income generation materials, insufficient land, food or medical supplies and medical understaffing. To exploit opportunities for improved maternal/child health and progress towards global sustainable development goals, this study points to needs for local action. *(Afr J Reprod Health 2020; 24[3]: 88-100).*

Keywords: Teenage mother, nutrition, health, supports, challenges, social cognitive theory

Résumé

Il existe un énorme besoin d'interventions communautaires réalisables et acceptables pour lutter contre la mauvaise nutrition et la santé des mères adolescentes dans les régions rurales de l'Est de l'Ouganda. Pour éclairer ces interventions, nous avons identifié des facilitateurs / opportunités et défis pour la nutrition et la santé maternelle / infantile au niveau communautaire, tels que perçus par les personnes les plus proches du problème. Des entretiens approfondis ont été menés auprès de 101 adolescents, membres de la famille et de la communauté du sous-comté de Budondo à l'aide de questions basées sur des concepts de théorie sociale cognitive liés à la nutrition / santé. Les données ont été analysées par thème à l'aide d'Atlas-ti7.5.4. Les animateurs comprenaient le soutien de la famille pour la prise de décisions positives chez les adolescents concernant les soins de santé et les pratiques et les opportunités comprenaient une formation sur la génération de revenus et la disponibilité des services de santé. Les défis comprenaient l'attitude médiocre des parents envers les agents communautaires, les traitements sévères, l'incapacité d'obtenir des matériaux générateurs de revenus, l'insuffisance des terres, de la nourriture ou des fournitures médicales et le manque de personnel médical. Afin d'exploiter les opportunités d'amélioration de la santé maternelle / infantile et de progresser vers les objectifs mondiaux de développement durable, cette étude souligne les besoins d'action locale. *(Afr J Reprod Health 2020; 24[3]: 88-100).*

Mots-clés: Mère adolescente, nutrition, santé, soutiens, défis, théorie cognitive sociale

Introduction

Teenage pregnancy harms the social and economic prospects of teenage mothers, their families and communities, and can lead to a cycle of poor health for the teenage mothers and their infants[1,2]. One out of four teenagers (15-19 years) in Uganda becomes pregnant with the rates being higher in rural (27%) than urban Uganda (19%)[3]. In the Busoga region of Uganda, it was reported that 21% of 15-19 year teenagers have begun child bearing[3]. We had previously identified diverse needs and barriers facing teenage mothers in rural Eastern Uganda[4]. Many of these needs relate to the challenges recognized within the UN Sustainable Development goals, including poverty, hunger, poor health, lack of education and gender inequality. Examining what works or can potentially work to improve teenage maternal/child health from the perspectives of family and community level service providers, is a first step to identifying and prioritizing areas for

action. Application of the social cognitive theory (SCT)[5-7] helps to emphasize the individual and environmental (social, economic, physical, nutrition, health service) factors that interact to influence the behaviors of teenage mothers and service providers. The specific objectives of the study were to describe multiple stakeholder perceptions of both opportunities for the well-being of teenage mothers and challenges faced by teenage mothers and the persons who serve and influence them.

Methods

The social cognitive theory (SCT) (Figure 1) was used to explain how the interaction of personal (or individual) factors, environmental factors and behaviors[5-8] influence the health and nutrition of teenage mothers. The study also took on the epistemological lens of postpositivism so as to point out factors affecting teenage maternal/child nutrition and health, beyond the researcher's perspective[9-15]. The study therefore used both closed ended questions based on a priori broad themes of opportunities and challenges were constructed along the SCT[9-15] and open-ended questions for additional views from the stakeholders[10,16].

Study site

The study was carried out in rural Budondo sub-county, located 25 km from Jinja Town in the Jinja district of Busoga region, Eastern Uganda[17]. Eastern Uganda is the poorest region in the country, having a poverty rate of 24.5%[18,19] and Budondo sub-county (population 51,560, 51.8% female and 48.2% males)[17] has more than a third living below the poverty line[20]. The sub-county has 6 public health centers and most of its residents are subsistence farmers[17].

Inclusion criteria

All study participants signed the study consent forms and had resided in the study area for at least 3 years. The teenage mothers were either carrying or having their first baby (0-12 months). Family members are those who were supporting or staying with the teenage mothers while service providers had served the community for at least 3 years.

Study *sample and recruitment*

Individual interviews were conducted with 101 key individuals (Table 1) representing teenage mothers, family members and service providers. Six community-based study coordinators used purposive sampling for identifying and recruiting participants[10,21,22] by assessing the eligibility of participants who had either been teenage mothers aged 10-19 years or family members and community service providers who closely related/worked with teenage mothers. Recruitment of a representative sample of study participants went on until saturation of key themes appeared to have been reached.

Data collection

Data was collected for 3 months from March to May 2016 by the researcher (JN). Interview guides, translated into the Lusoga language, were used to collect data. Key questions were based on individual and environmental (social, economic, physical, nutrition, and health service) level factors perceived as available to support teenage mothers and challenges faced by family and community members in offering support. At the start of each interview conducted by the researcher (JN) with the help of local trained research assistants, participants were informed of the purpose of the interviews and assured of the privacy and confidentiality of their information. Interview guides were pre-tested in rural Butagaya sub-county with representatives of the target groups (n=3), which helped to simplify questions further. Interviews were carried out in privacy and confidentiality at places of work or homes of the participants, taking an average of 40 minutes. Each of the participants had only one interview session.

Data analysis

Interview audio-recordings were transcribed verbatim and translated into English by a transcriber who was well versed in the Lusoga language. Codes were created from the transcribed interviews based on the SCT framework and *a priori* themes of facilitators/opportunities and challenges affecting teenage mothers. Using Atlas-ti 7.5.4, expressions in each transcript were linked to these codes which were, in turn, analyzed thematically[10,23-25], as shown in Figure 2.

Results

Demographic characteristics of the respondents

Over 60% of all study participants (n=101) were female, 25 % were teenage mothers, 11% were family members of teenage mothers and 64% were community service providers (see Table 1).

Opportunities for teenage mothers and challenges of service providers

Both the opportunities potentially available to support teenage mothers and the challenges faced by both family members and service providers were categorized according to individual and environmental (social, economic, physical, nutrition, health service) level considerations.

Individual level

Facilitators at individual level

According to respondents, some teenage mothers displayed a positive attitude through their individual actions: attending health care appointments and hospital delivery; carrying their pregnancies to term instead of having abortions, cultivating crops and rearing animals; laboring for a pay by tilling land for community members; and making handcrafts for sale. In some cases, these decisions were reinforced by social and environmental support from families.

> *"I also made a (personal) decision to deliver my baby at Budondo (health center IV). Yes I breastfed the baby soon after birth and for 6 months as advised. I also take my baby for immunization…Yes I decided on my own to sleep under a net as advised at the hospital"* Lactating Teenage 1.

Trust of teenage mothers in the nurses was also perceived as an opportunity that led to them taking medicines given by nurses, acting on health related advice such as using insecticide treated bednets that had been provided, and practicing timely initiation of breastfeeding and exclusive breastfeeding.

Challenges experienced at individual level

Failure to practice exclusive breastfeeding was attributed to lack of emotional support and lack of information, leading to misconceptions such as fear that lactating would make their breasts grow old, and lack of support to deal with complications like sore nipples. The opportunity to earn money was challenged by lack of persistence in acquiring income generation skills. Some service providers in the health and education sector in rural Uganda stated that they could not support teenage mothers as they lacked motivation to take on additional work as they felt they were underpaid or were not paid at all.

> *"The situation is getting out of hand and it will become worse until we all wake up. Right now we (medical staff) just do the basics and not get out of our comfort zones because this government is so selfish. They expect us to serve under such harsh conditions while they take all the fat pays home. I assure you, things are so bad but we will just look on and let the patients keep on complaining."* Doctor 1.

Lack of skill contributed to care by medical staff that was not tailored to teenagers. Health related personnel, namely midwives, village health team members (VHTs) and traditional birth attendants, perceived that compared to adult mothers, teenage mothers were at a higher risk of caesarean delivery and vaginal tears due to narrow passages.

> *"As staff* [medical staff] *we are not trained to cater for adolescent friendly services and I can confirm that our adolescent or teenage mothers suffer."* Doctor 2.

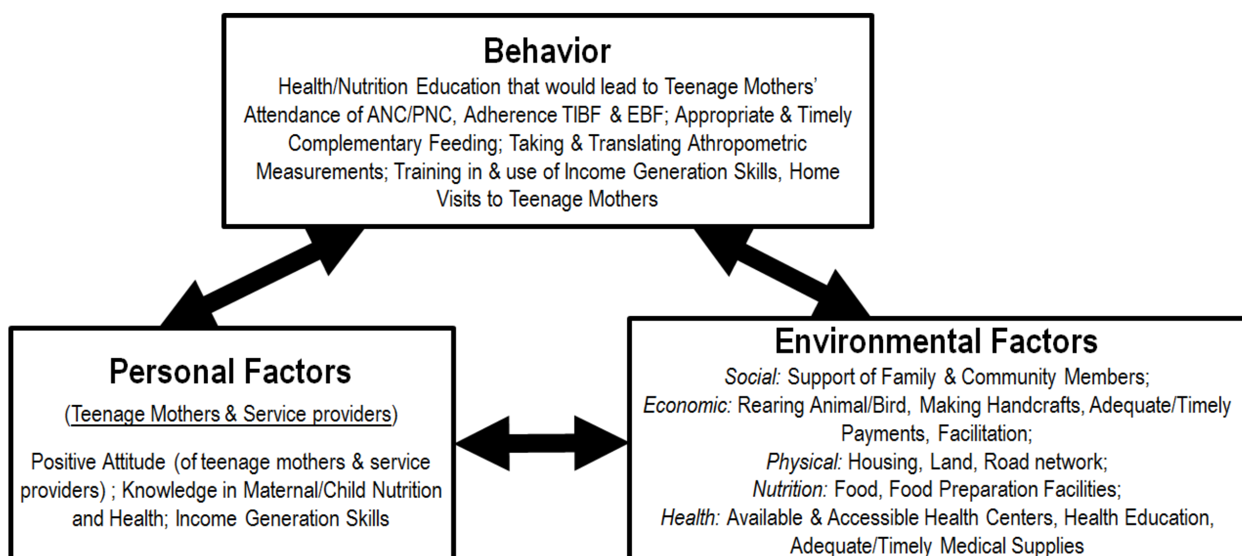
Social environment level

Facilitators at social environment level

More than half of the respondents reported that families and VHTs in rural Uganda supported teenage mothers by comforting, encouraging and advising them about not losing hope, and helped to make decisions for mothers to deliver at health centers. Advice on attending medical care at modern health facilities, sleeping under an insecticide treated bed net and practicing exclusive breastfeeding was also given by family and community members. Traditional birth attendants (TBAs) were mentioned by some stakeholders to have a kind and caring attitude towards the teenage mothers. Some parents said they heeded advice given by community members and changed their attitudes towards their daughters.

Table 1: Demographics of study respondents (N=101)

Respondent Category	Gender Male	Female	Total Number	Percentage (%)
Pregnant Teenagers	0	11	11	10.9
Lactating Teenagers	0	14	14	13.8
Family Members of Teen Mothers	0	11	11	10.9
Educators	9	7	16	15.8
Doctors	4	0	4	4.0
Midwives	0	7	7	6.9
Village Health Team workers (VHTs)	1	4	5	4.9
Traditional Birth Attendants (TBAs)	0	3	3	3.0
Agricultural Officers	3	0	3	3.0
Religious Leaders	3	0	3	3.0
Local Council I (LCI) Chairpersons	6	0	6	5.9
District Administrators	4	4	8	7.9
Sub-county Administrators	3	2	5	4.9
NGO Staff	3	2	5	4.9
Total	**35**	**66**	**101**	**100**



ANC (antenatal care); PNC (postnatal care); TIBF (timely initiation of breastfeeding); EBF (exclusive breastfeeding)
Adapted by Authors from: Glanz K, Rimer BK and Viswanath K. Health behavior and health education: Theory, research, and practice. Jossey-Bass. Fourth Edition, 2008, 42, 169, 170, 273, 274. https://dphu.org/uploads/attachements/books/books_1483_0.pdf[4]

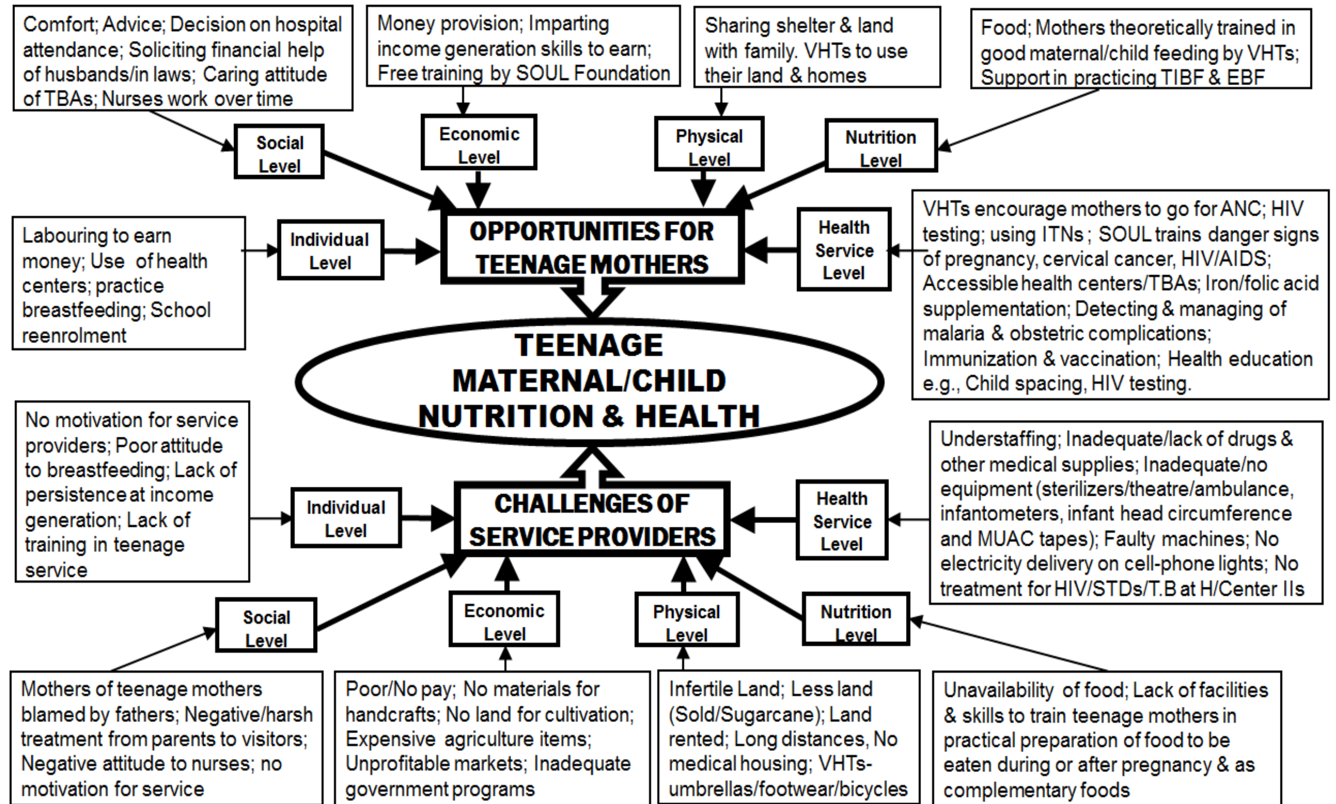
Figure 1: Social cognitive theory framework of perceived opportunities of teenage mothers and challenges of service providers

For example, it was perceived that some of those who took their daughters back to school led those daughters to successfully complete their education. Other stakeholders reported that some medical staff had changed their attitude for the better and were working longer hours. Some local leaders also took on the role of calling for and facilitating meetings of the families of teenage mothers and their babies' fathers to solicit financial support for the babies from these fathers and their parents.

> *"My mother, grandmother, aunts, nurses and VHTs decided that I deliver at the hospital and advised me to take my baby to the hospital for immunization. They also told me to breastfeed exclusively."* Lactating teenage 2.

Challenges at social environment level

Mothers of teenage mothers may have the challenge of being seen as exclusively responsible for their children, e.g., some fathers of the teenage



Adapted by Authors from: Attride-Stirling J. Thematic networks: an analytic tool for qualitative research. Commission for health improvement, England. Qualitative Research. SAGE Publications (London, Thousand Oaks, CA and New Delhi). 2001; 1(3): 385-405[22]

Figure 2: Thematic network of opportunities of teenage mothers and challenges of service providers of maternal/child nutrition and health as perceived by teenage mothers and stakeholders

mothers blamed their wives for the pregnancy of the teenage daughters as it was the wife's role to keep the daughters in good order. This in turn may have contributed to their own negative feelings towards their pregnant daughter.

> *"When the girl gets pregnant, the father will accuse the mother for having sent her daughter to go get pregnant just because women are expected to be in charge of good behaviors of children especially daughters."* District Administrator.

Members of the community, such as VHTs and village leaders, mentioned they would have visited teenage mothers, an opportunity of follow-up, but some parents were harsh to them. The opportunity of service given by medical staff was hindered by the community's negative attitude towards medical personnel, calling them thieves of medical supplies, and yet the response of medical staff was that medical supplies were unavailable.

> *"We (midwives) are not rude but we just correct them on a few issues like their poor hygiene and lack of delivery items such as gloves…. but people just have a negative attitude towards us saying we steal those things* [delivery items and drugs]. *Some girls come without gloves, do they expect us to deliver their babies with our hands and get infections?"* Midwife 1.

A social challenge associated with teen pregnancy that area leaders identified is animosity and a blame cycle between the family of the pregnant teen and the family of the baby's father. Such disputes may revolve around accountability for economic and other support of the teen mother.

Understaffing was a challenge of healthcare staff as this led to heavy workloads that left them with no time for extra work such as

taking anthropometric measurements of patients. Translating information to patients regarding health indicators or visiting teenage mothers at their homes was also affected by lack of time, as many of the medical personnel were devoted to serving and clearing the large numbers of patients at the health centers. Moreover, the medical personnel were not trained in teenage special care.

> *"We* [midwives] *don't visit them* [teenage mothers] *because we are under-staffed yet you have to work everywhere like ANC (Antenatal care), OPD* [Out Patient Department] *and by the time you finish, you are very tired. That is why even taking those simple weight measurements and explaining the health status of mothers or babies is hard so we just record their measurements"* Midwife 2.

Economic environment level

Opportunities at economic environment level

The majority of the respondents commented that some family members supported their daughters by providing them with financial support and transferring and monitoring income generation skills, such as making mats and baskets, rearing of animals, and crop growing. SOUL Foundation and PEFO (Phoebe Education Fund for Orphans & vulnerable children) were identified as organizations providing avenues for income generation skills through vocational and agriculture training which teenage mothers could make good use of.

> *"SOUL Foundation teaches skills like fish farming, goat and chicken rearing, crop growing, tailoring, crafts like making jewelry and bags to all women, girls and men at no cost. Also women form groups of about 5, SOUL foundation then purchases for them about 300 chicks* [broilers] *to raise them. We have also started the program of send a goat just like send a cow."* NGO Staff 1.

Challenges at economic environment level

Lack of money was a barrier for parents and other community members like area leaders to provide for the teenage mothers. There was also inadequacy in supports for income generation e.g., lack of materials for making handcrafts or land for cultivation, high costs of agriculture items, unprofitable markets and livestock diseases.

> *"Many of us are really very poor and cannot afford many things. Agricultural equipment, seeds, fertilizers, pesticides and livestock medicines are sold at a high price which discourages us. We do not have profitable market for our produce, when the produce is flooded on market we lower the prices to avoid wastage of our produce hence making losses."* Agricultural Officer.

Economic opportunities from NGOs like PEFO Uganda were not benefiting some of the mothers who lacked fees to pay for training in income generation skills. Teenage mothers also failed to be among the beneficiaries of the free seeds or animals for agriculture given by NAADS (National Agricultural Advisory Services) now turned into Operation Wealth Creation, a government program in the study area, because they weren't established with homes and land for farming, as is the case for adults.

> *"NAADS* [Operation Wealth Creation] *usually gives items* [agricultural items] *to adults with established homes having land to rear the given animals or grow seeds."* Religious Leader.

Physical environment level

Opportunities at physical environment level

Over a third of the respondents reported that some families supported teenage mothers by providing them with shelter and land for crop cultivation and animal rearing. In addition, some VHTs had land and homes that they were willing to offer for training teenage mothers.

> *"Yes, I can offer my land to train them* [teenage mothers] *in agriculture or my sitting room to train them in making handcrafts. The issue of making handcrafts should be encouraged because our children in both rural and urban schools are not being taught these skills yet they could help them make money after school. My kitchen is big enough to train in cooking food but will need money to buy other items."* VHT 1.

Challenges at Physical Environment Level

Even supportive families cannot always support their daughter's income generation needs; for

example, some of the land was infertile or some families lacked land as theirs had been sold off.

> *"They* [teenage mothers] *use the land of parents but the problem we have is that the land is not enough as most of it is sold off or used to grow sugarcanes so one has to rent farm land and land is infertile."* Local Council I Chairperson 1.

Long distances and lack of staff housing at the health centers led to late reporting to work by medical staff, hindering availability of healthcare services. Similarly, long distances to NGOs that provided health/nutrition education and vocational skills were also reported to be a challenge. In addition, lack of umbrellas, protective footwear and transportation in the form of bicycles hindered voluntary work of VHTs.

> *"We stay far from the health facility. The one house here at the health center is not enough for us. We travel by boda-bodas* [commercial motorbikes for public transportation] *and most times it will have rained so you have to wait for the rains to stop then you come to work. We lack transport. If they build houses for us, we can stay at the hospital and we stop coming late."* Midwife 3.

Nutrition environment level

Opportunities at nutrition environment level

Most of the stakeholders who commented reported that families gave food to the teenage mothers in the quantities that were available. VHTs trained teenage mothers on theoretical aspects of foods to eat during and after pregnancy and complementary feeding. In addition, medical personnel helped teenage mothers to practice timely initiation of breastfeeding and encouraged teenage mothers to practice exclusive breastfeeding.

> *"After delivering the baby, we immediately put the baby on the mother's breast before they leave the delivery bed and we also encourage them to exclusively breastfeed for 6 months."* Midwife 4.

Challenges at nutrition environment level

Half of the respondents also identified that the opportunity of provision of food to teenage mothers was challenged by the adequacy of available food as some families had a meal once a day and others had two meals a day. Other respondents reported that training of teenage mothers in practical food preparation was hindered by a lack of funds, facilities, and skilled personnel.

> *"Those food preparation practicalities* [for feeding during pregnancy and complementary feeding] *are not taught; we lack skills in that. Only 4 VHTs in the whole sub-county were taken for training by TASO* [The AIDS Support Organization] *some years back. We lack the funds and facilities to teach these. We only teach the foods to be eaten theoretically from charts."* VHT 2.

Health service environment level

Opportunities at health service environment level

Teenage mothers in rural Uganda reported that health centers provided them with a number of antenatal care and postnatal services including iron/folic acid supplementation, management and treatment of malaria, detection and management of obstetric complications, immunization and vaccination, child spacing/family planning, and HIV counselling and testing. Teenage mothers, just like other mothers, were only given free insecticide treated bednets and delivery support materials (e.g., gloves, mama kit) on condition of availability at the health center, otherwise one had to buy the said materials. Respondents also reported that health education in rural Uganda was carried out at the health center by VHTs on topics such as danger signs during and after pregnancy. SOUL Foundation, an NGO, was reported by 15 (15.5%) of the respondents to also train mothers in maternal health education.

> *"We (SOUL Foundation) provide maternal/child nutrition education to both men and women who enroll in our classes that are twice a week for 8 week. We talk about the danger signs of pregnancy, cervical cancer, HIV/AIDS and offer family planning services."* NGO Staff 1.

It was also reported that some of the health centers in rural Uganda whose staff lived close by were accessible. Teenage mothers who could not access modern health centers made use of TBAs who

asked for low costs, were considered to be kind, and had delivered babies of previous generations as well and so teenage mothers were referred to them through testimony from their own mothers and peers who appreciated that service of TBAs.

> *"Girls are sent to me by their mothers or peers who have delivered here. I care for women well with kindness and even give them some food. There are no waiting lines, I am always available and not rude unlike the modern nurses. Also I charge them little money (20,000= UGX ~$5.6 USD)."* TBA.

Challenges at health service environment level

Treatment of HIV, Sexually Transmitted Diseases, and Tuberculosis was only done at the health centers III and IV. Inadequate/lack of medicines and medical supplies was an avenue for poor service delivery to the community members, as reported by 60% of the respondents. The lack of medicines was blamed on suspected thefts at different levels.

> *"Lack of medicines in the health centers is a complex issue. The salaries of the medical workers is little and it takes long to come so when they bring like ten boxes of medicine at health center IV now medical workers there can also sell like three boxes before sending it down to the health center II like ours. And when it gets here, even the medical personnel will sell off some boxes which makes the medicines less and in a short time, they say the medicines are finished. The drugs first go to the district when they reach the sub-county, they send them to the health centers and all these routes have drug thefts which complicates the matter more. But government sends medicines like mainly coartem* [an anti-malarial medication] *in large amounts but it also gets finished very quickly and we wonder and yet when you buy from the drug shops it is very expensive at 6,000= UGX shillings* [equivalent to $1.68 US dollars] *per dose which is a lot of money for such teenage mothers. The drug inspectors also no longer come to see what is happening hence the increased theft of drugs but I think they also lack transport. When the medicines are brought, medical workers at the health centers are only given a list to sign for deliveries without checking to confirm. So people may be angry at the medical workers for no reason at all."* Local Council I Chairperson 2.

Health centers also lacked equipment, e.g., infant weigh scales, so infants as young as 2 months were being weighed by mothers using panty/sac weighing scales that were designed for older, sitting babies. Infant head circumference and mid upper arm circumference tapes were also not available. In other health centers, equipment such as weighing scales, tuberculosis detection machines, blood pressure monitors, and incubators were faulty and awaiting repair. This made health monitoring difficult and may have contributed to poor maternal/child health. The whole sub-county lacked modern sterilizing equipment, a theatre for surgeries, and an ambulance to swiftly take patients to referral hospitals. Lack of or sporadic electrical power not only made refrigeration of vaccines difficult, but midwives had to use the light of their cell-phones to deliver mothers at night.

> *"We* [health centers II and III] *receive medicines but they are not enough. Our health center operates on the 'push system' where drugs are procured and sent to you without consulting with what is needed unlike the 'pull system' which is for health center IVs and referral hospitals who order for drugs they need in the quantities needed. From January to February, we didn't receive gloves and from April to May we did not receive any anti-malarials like artesunate and coartem. Some things are just beyond our making. They (community members) keep saying that they see trucks off-loading boxes here but most of the times, the boxes contain condoms sent by the Marie Stopes organization and these are always in plenty. Electricity is a problem and our nurses perform night deliveries using their cellphone torches. Imagine we can't even have a mini surgery and we have only one incubator. When machines like that one incubator gets spoilt, repairing them takes ages and yet the population needs the services."* Doctor 2.

Figure 1 shows how these individual facilitators, social and environmental factors interact, reciprocally to improve teenage health behaviours.

Discussion

This is the first study to examine opportunities to improve teenage maternal/child nutrition and health in the context of Budondo county, rural Eastern using the Social Cognitive Theory (SCT) to understand how the social and physical environments contrive to affect the choices of teenagers to meet their needs and those of their offspring. The perspectives of the very broad range of stakeholders of the current study not only provide validation for others' studies and also provide greater breadth and depth of understanding of both facilitators/opportunities and challenges.

Some opportunities identified by this study confirm the findings of other studies in Uganda, including that mothers preferred to deliver with the help of TBAs instead of using the midwives in modern health centers[26-29]. Challenges, consistent with other studies, included: understaffing for medical workers[30,31], low supplies of medical items and lack of medical equipment at the health centers[31]. This study, however, reveals a number of new facilitators/opportunities and challenges which reciprocally interact to affect teenage health behaviors. Attitudes were both facilitators and barriers: in some cases, family support enabled positive teen decision-making regarding healthcare and practices; however, poor attitudes of parents towards community workers, and blame and harsh treatment of teenage mothers by family, community and healthcare workers persist. Similarly new opportunities for income generation training in some areas, coexisted with lack of money, materials and skilled educators. While availability of healthcare services was an asset in some parts of the region, access to health centers, and especially those offering specialized treatments, e.g., for HIV, Sexually Transmitted Diseases, and Tuberculosis, was challenging for both mothers and health care personnel. Unique opportunities revealed by this study included health education provided by VHTs and an area NGO (SOUL Foundation) which could help overcome lack of information, for example, regarding exclusive breastfeeding, furnish some of the need for health services specific to teenage mothers and address some of the stigma against teen mothers.

Teenage mothers, families and service providers demonstrated strength and resilience, even when faced with harsh experiences. This strength can help teenage mothers to make positive choices, including empowering them to complete school. The coping strategies they develop can be applied to address areas of challenge[32]. The caring attitude of TBAs and the change to more caring attitudes among some medical staff creates positive social environments and support healthy choices for teenage mothers[32]. Thus individual and social factors interact to affect health behavior.

Mothers of teenage girls are blamed for the pregnancy of their daughters due to historic gender biases related to childcare[33,34] and health-related communication in Uganda[35-37]. Rather than perpetuate this negativity, families and those in positions to influence them can support a shift in attitudes and behaviors towards those demonstrated by the handful of families in this study that supported teenage mothers emotionally, economically and in making positive health-related choices.

Poverty rates in rural Uganda are high[18,19] and contributes to families' not providing their daughters with much financial help. However, external support through NGOs may be available. Much as teenage mothers did not have an organization that specifically supported them, the Presidential initiative on skilling the girl child fully funded by the State house of Uganda to equip urban female youths in Kampala district with vocational skills for self-sustenance[37,38] should be expanded to also benefit teenage mothers in the rural areas of Uganda. This initiative trains out-of-school female youths in skills like hair dressing, shoe making, weaving, knitting and baking for 6 months, and provides them with start-up funds on graduation[38,39]; the recent graduation of year 2018 having had 4,400 girls[40]. SOUL Foundation and PEFO are some of the NGOs in the study area that teenage mothers could potentially benefit from. SOUL, for example uses a number of effective strategies, such as training VHTs and midwives as community agents, using cooperatives or groups of peers trained in agriculture and vocational skills to transfer skills, and giving seed grants in the form of finances or agriculture items[41], that could also be directed towards the needs of teenage mothers. The strategies used by PEFO to improve

the economic well-being of the elderly and orphans in Jinja district, and teenage mothers in Busia district e.g., adopting a goat, developing a saving scheme; and training in vocational and agriculture skills, could be borrowed for self-employment of teenage mothers[42]. These projects carried out by PEFO could be transferred to teenage mothers to support self-employment. Existing challenges with NGOs being deemed inaccessible to teenage mothers by distance or tailored service could be overcome by using trained community-based workers to, in turn, train teenage mothers[43-46]. BRAC Uganda is an organization that trains community health workers in health improvement and gives them an opportunity to purchase first aid medicines (e.g., anti-malarial medications and pain killers) at a low cost to be sold to patients in the rural areas who would not otherwise have regular access. This is a way of bringing services closer to those who need them and at the same time making such services economically feasible for VHTs[47-49]. Since VHTs were found by this study to be willing to serve at some pay, this may be an opportunity for improvement of teenage maternal/child and well-being in rural Uganda[47]. These external organizations that enhance provider skills, facilitate changes in the social and health care environments of teenage mothers and in some cases enhance access to physical resources which in turn increases the individual and economic capacity of teenage mothers to make choices to enhance their health.

Most of the health-related challenges revealed by this study point towards lack of funds and lack of time due to low numbers of medical staff and heavy workload for health personnel. These factors could easily compromise the WHO six building blocks of an ideal healthcare system aimed at efficient and quality service including: service delivery, adequate workforce, information systems, accessibility to medicines, financing of the health sector, leadership and governance[50]. However, there are some opportunities that can be exploited for the improvement of teenage maternal/child nutrition and health. Payment and training of VHTs would provide an incentive to extend and enhance their services, such as offering home-based counselling, training and monitoring of teenage maternal/child nutrition and health[43-46]. This could create synergies such that medical personnel could focus their limited time on more specialized services.

Teenage mothers turned to TBAs as a preferred alternative compared to modern health services due to their kindness, affordable delivery fees and good recommendations from other mothers. TBAs could be used as agents of change for the improvement of teenage maternal/child nutrition and health through encouraging care and positive attitudes of family and community since they are trusted by community members in Uganda[51,52]. Training or retraining of TBAs with support of NGOs has been demonstrated elsewhere to improve their service[41,53]. Advocacy with the help of results of this study could support such training, however, the Ministry of Health of Uganda has banned the training and work of TBAs[54]. Alternatively, if TBAs are not the answer, other health providers like VHTs or medical personal can learn from the TBA's model of supportive care and build more positive community relations.

Taking and recording of measurements of teenage mothers and communicating these measurements to mothers would empower them with knowledge of how to improve their nutrition and health status. This can be done by the medical personnel once trained, as shown in a study by Izudi and others[55]. Resources for this type of training, service and supplies should be coming from government that could be advocated to not only invest in interventions but also create attractive environments for their success[56] as this may also improve teenage maternal/child health.

Local level stakeholders of teenage maternal/child nutrition and health improvement in rural Uganda to some extent have the power to support decisions for the well-being of teenage mothers but their ability to bring about and sustain improvements is constrained by external structural factors related to policies, economics, and overarching social institutions. As individual agents, stakeholders for the improvement of teenage maternal/child nutrition and health in rural Uganda may be willing to offer various forms of support but are hindered by structural factors. There is a need to integrate and jointly handle the two approaches of agency and structure[57-60] for the improved well-being of teenage mothers. Available policies that support women/girls in Uganda, for example, the Uganda

National Gender Policy (2007)[61,62] and Uganda's National Action Plan on Women (NAPW)[62,63], if strengthened could help improve the well-being of teenage mothers. Similarly, advocates and researchers can work with government and non-governmental agencies and funders to support policies and practices that empower and support young girls and women.

Conclusion

For teenage mothers and infants in rural Eastern Uganda the cycle of poverty, malnutrition and ill health must not be inevitable. The challenges facing those who offer support or service are undeniable and complex. Nevertheless, teenage mothers and other participants in this study pointed to opportunities for improvement. This research shows how a number of opportunities and challenges at personal and environmental levels reciprocally interact to affect health behaviors of teenage mothers. The research also underpins the importance of community-level interventions that act on available opportunities at local levels and beyond.

Ethics Approval and Consent to Participate

This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving human participants were approved by the Office of Research Ethics of the University of Waterloo (ORE # 20708), The AIDS Support Organization Research Ethics Committee (TASO-REC) [TASOREC04/16-UG-REC-009] and Uganda National Council for Science and Technology (UNCST) [number SS4013]. Written support was also given by Uganda Christian University (UCU); Ministry of Health for Uganda, Ministry of Education for Uganda, and authorities of Jinja district, Budondo sub-county and the local community. Written, informed consent was obtained from all participants.

Competing Interests

None.

Author's Contributions

JN and RH conceptualized the study; JN, RH, GKS, and KC designed the study; JN, RH, GKS, and KC coordinated the study; JN collected, transcribed and analysed the data, and wrote the manuscript with editorial input from: RH, GKS, KC, and SH.

Acknowledgements

We are grateful to the Nestlé Foundation for the Study of Problems of Nutrition in the World, Lausanne, Switzerland for funding the study. The Nestlé Foundation had no role in the study design, conduct of the study, analysis of data, interpretation of findings or writing of this article.We appreciate all the study participants who gave us their valuable time. The 6 VHTs who were our community study coordinators are appreciated. Also appreciated are: Dr. Cornelius Wambi Gulere (who translated study instruments into Lusoga language); Ms. Kalimwine Liz (Recording Assistant); and Mr. Mwami Enoch Isaac (who helped with transcription).

References

1. WHO. Adolescent pregnancy: issues in adolescent health and development. WHO discussion papers on adolescence. Geneva, World Health Organization, 2004. http://apps.who.int/iris/bitstream/10665/42903/1/9241591455_eng.pdf. Accessed 10 Oct 2017.
2. UNFPA. The state of world population 2013. Motherhood in childhood: facing the challenge of adolescent pregnancy, 2013, 132. http://www.unfpa.org/publications/state-world-population-2013. Accessed 09 Oct 2017.
3. UBOS (Uganda Bureau of Statistics) and ICF International Inc. Uganda demographic and health survey 2016. Kampala, Uganda: UBOS and Calverton, Maryland: ICF International Inc, 2016.
4. Nabugoomu J, Seruwagi GK, Corbett K, Kanyesigye E, Horton S and Hanning R. Needs and barriers of teen mothers in rural eastern Uganda: stakeholders' perceptions regarding maternal/child nutrition and health. Int. J. Environ. Res. Public Health **2018;** 15(12): 2776. Doi: 10.3390/ijerph15122776.
5. Glanz K, Rimer BK and Viswanath K. Health behavior and health education: Theory, research, and practice. Jossey-Bass. Fourth Edition, 2008, 42, 169, 170, 273, 274. https://dphu.org/uploads/attachements/books/books_1483_0.pdf. Accessed 07 Dec 2017.
6. McKenzie JF and Smeltzer JL. Planning, implementing, and evaluating health promotion programs. Allyn and Bacon. Second Edition, 1997, 96-114.
7. Bandura A. Health promotion by social cognitive means. Health Educ Behav 2004; 31(2): 143-64.
8. Glanz K. Behavioural and social sciences research: social and behavioral theories, 2017, 40. http://www.esourceresearch.org/Portals/0/Uploads/Documents/Public/Glanz_FullChapter.pdf. Accessed 07 Dec 2017.
9. Creswell JW. Research design: qualitative, quantitative, and mixed approaches. Thousand Oaks, CA: SAGE

10. Publications, Inc. Forth Edition, 2014, 6-8.
11. Ritchie L and Lewis L. Qualitative research practice: A guide for social science students and researchers. SAGE Publications, Inc. First Edition, 2003, 336. http://www.sxf.uevora.pt/wp-content/uploads/2013/03/Ritchie_2003.pdf. Accessed 18 Sep 2017.
12. Bisman J. Postpositivism and accounting research. A (personal) primer on critical realism. AAFBJ 2010; 4(4): 1-25.
13. Hutton E. An examination of postpositivism and postmodernism, 2009. http://ericahutton.blogspot.ca/2009/03/examination-of-postpositivism.html. Accessed 18 Sep 2017.
14. Crossan F. Research philosophy: towards an understanding. Nurse Res 2003;11(1):46-55.
15. Racher FE and Robin S. Are phenomenology and postpositivism strange bedfellows? West J Nurs Res 2003; 25(5): 464-81.
16. Clark AM. The qualitative-quantitative debate: moving from positivism and confrontation to post-positivism and reconciliation. J Adv Nurs 1998; 27(6) :1242-9.
17. Swift JA and Tischler V. Qualitative research in nutrition and dietetics: getting started. J Hum Nutr Diet 2010; 23(6): 559-66.
18. UBOS (Uganda Bureau of Statistics). Republic of Uganda: national population and housing census 2014, 2014, 105. http://www.ubos.org/onlinefiles/uploads/ubos/NPHC/2014%20National%20Census%20Main%20Report.pdf. Accessed 18 Sep 2017.
19. UNDP. Republic of Uganda poverty status report 2014: structural change and poverty reduction in Uganda, 2014, 156. http://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/uganda_poverty_status_report_2014.pdf. Accessed 29 Oct 2017.
20. World Bank Group. The Uganda poverty assessment report 2016. Farms cities and good fortune: assessing poverty reduction in Uganda form 2006 to 2013. Report No ACS18391, 2016, 178. http://pubdocs.worldbank.org/en/381951474255092375/pdf/Uganda-Poverty-Assessment-Report-2016.pdf. Accessed 16 Oct 2017
21. UBOS (Uganda Bureau of Statistics)-Jinja district. Higher local government statistical abstract, 2009, 98.http://www.ubos.org/onlinefiles/uploads/ubos/2009_HLG_%20Abstract_printed/jinja%20district%202009%20statistical%20abstract%20FINAL1.pdf. Accessed 18 Sep 2017.
22. Tongco MDC. Purposive sampling as a tool for informant selection. Ethnobotany Research & Applications 2007; 5: 147-58.
23. Draper A and Swift JA. Qualitative research in nutrition and dietetics: data collection issues. J Hum Nutr Diet 2011; 24(1): 3-12.
24. Attride-Stirling J. Thematic networks: an analytic tool for qualitative research. Commission for health improvement, England. Qualitative Research. SAGE Publications 2001; 1(3): 385-405. http://utsc.utoronto.ca/~kmacd/IDSC10/Readings/Readings/text%20analysis/themes.pdf.
25. Smith J and Firth J. Qualitative data analysis: application of the framework approach. Nurse Researcher 2011; 18(2): 52-62.
26. Braun V and Clarke V. Using thematic analysis in psychology. Qualitative Research in Psychology 2006; 3(2): 77-101.
27. Atuyambe L, Mirembe F, Annika J, Kirumira EK and Faxelid E. Seeking safety and empathy: adolescent health seeking behavior during pregnancy and early motherhood in central Uganda. J Adolesc 2009; 32(4): 781-96.
28. Kwagala B. Birthing choices among the Sabiny of Uganda. Cult Health Sex 2013; 15 Suppl 3: S401-14.
29. Keri L, Kaye D and Sibylle K. Referral practices and perceived barriers to timely obstetric care among Ugandan traditional birth attendants (TBA). Afr Health Sci 2010; 10(1): 75-81.
30. Kanabahita C. A lifetime as TBA in Uganda. Safe Mother 1993; (12): 10.
31. Lutwama GW, Roos JH and Dolamo BL. A descriptive study on health workforce performance after decentralisation of health services in Uganda. Hum Resour Health 2012; 7(10): 41.
32. Chi PC, Bulage P, Urdal H and Sundby J. A qualitative study exploring the determinants of maternal health service uptake in post-conflict Burundi and Northern Uganda. BMC Pregnancy Childbirth 2015; 15: 18.
33. Ricks N. The strengths perspective: providing opportunities for teen parents and their families to succeed. J Fam Strengths 2016; 15(11): 1-20.
34. McKenna AN. The role of Ugandan women in rural agriculture and food security, 2014. http://digitalcommons.du.edu/cgi/viewcontent.cgi?article=1419&context=etd. Accessed 09 Oct 2017.
35. FAO and ADB. Gender equality and food security: women's empowerment as a tool against hunger, 2013, 114. http://www.fao.org/wairdocs/ar259e/ar259e.pdf. Accessed 09 Oct 2017.
36. Flax VL, Yourkavitch J, Okello ES, Kadzandira J, Katahoire AR and Munthali AC. "If my husband leaves me, I will go home and suffer, so better cling to him and hide this thing": The influence of gender on Option B+ prevention of mother-to-child transmission participation in Malawi and Uganda. PLoS One. 2017: 12(6): e0178298.
37. Singh D, Lample M and Earnest J. The involvement of men in maternal health care: cross-sectional, pilot case studies from Maligita and Kibibi, Uganda. Reprod Health 2014; 11: 68.
38. Obermeyer CM, Schulein M, Hardon A, Sievert LL, Price K, Santiago AC, Lazcano O, Kirumira EK and Neuman M.. Gender and medication use: an exploratory, multi-site study. World Health 2004; 39(4): 57-73.
39. Museveni KY. President launches initiative on skilling the girl child, 2016. https://www.yowerikmuseveni.com/president-launches-initiative-skilling-girl-child. Accessed 17 Aug 2018.
40. The State House of Uganda. "Fight poverty, unemployment" says President as he graduates skilled girls, 2017. http://www.statehouse.go.ug/media/news/2017/10/

30/fight-poverty-unemployment-say-president-he-graduates-skilled-girls. Accessed 17 Aug 2018.

41. Kwesiga P. New Vision News Paper: Museveni cautions ghetto youth to listen to NRM, 2018. https://www.newvision.co.ug/new_vision/news/1483876/museveni-cautions-ghetto-youth-listen-nrm. Accessed Aug 19 2018.
42. SOUL Foundation, 2017. http://www.souluganda.org/. Accessed Oct 6, 2017.
43. PEFO (Phoebe Education Fund for Orphans & vulnerable children), 2017. http://pefoug.org/. Accessed 06 Oct 2017.
44. Tylleskär T, Jackson D, Meda N, Engebretsen IM, Chopra M, Diallo AH, Doherty T, Ekström EC, Fadnes LT, Goga A, Kankasa C, Klungsøyr JI, Lombard C, Nankabirwa V, Nankunda JK, Van de Perre P, Sanders D, Shanmugam R, Sommerfelt H, Wamani H, Tumwine JK and PROMISE-EBF Study Group. Exclusive breastfeeding promotion by peer counsellors in sub-Saharan Africa (PROMISE-EBF): a cluster-randomised trial. Lancet 2011; 378(9789): 420-27.
45. Kirkwood BR, Manu A, ten Asbroek AH, Soremekun S, Weobong B, Gyan T, Danso S, Amenga-Etego S, Tawiah-Agyemang C, Owusu-Agyei S and Hill Z. Effect of the Newhints home-visits intervention on neonatal mortality rate and care practices in Ghana: a cluster randomised controlled trial. Lancet 2013; 381(9884): 2184-92.
46. Penfold S, Manzi F, Mkumbo E, Temu S, Jaribu J, Shamba DD, Mshinda H, Cousens S, Marchant T, Tanner M, Schellenberg D and Schellenberg JA. Effect of home-based counselling on newborn care practices in southern Tanzania one year after implementation: a cluster-randomised controlled trial. BMC Pediatr. 2014; 14: 187.
47. Flax VL , Negerie M, Ibrahim AU, Leatherman S, Daza EJ and Bentley ME. Integrating group counseling, cell phone messaging, and participant-generated songs and dramas into a microcredit program increases Nigerian women's adherence to international breastfeeding recommendations. J Nutr 2014; 144(7): 1120-4.
48. Nyqvist BM, Guariso A, Svensson J and Yanagizawa-Drott D. Reducing child mortality in the last mile: a randomized social entrepreneurship intervention in Uganda, 2017, 45. https://yanagizawadrott.com/wp-content/uploads/2017/08/livinggoods_april2017.pdf . Accessed 30 Oct 2017.
49. Nyqvist BM, Svensson J and Yanagizawa-Drott D. Can good products drive out bad? Evidence from local markets for antimalarial medicine in Uganda, 2016, 49.https://yanagizawadrott.files.wordpress.com/2016/03/fakedrugs3.pdf. Accessed 30 Oct 2017.
50. BRAC Health. Health, nutrition and population, 2017. http://www.brac.net/health. Accessed 30 Oct 2017.
51. WHO. Monitoring the building blocks of health systems. A handbook of indicators and their measurement strategies, 2010, 110. http://www.who.int/healthinfo/systems/WHO_MBHSS_2010_full_web.pdf. Accessed 16 Oct 2017.
52. Turinawe EB, Rwemisisi JT, Musinguzi LK, de Groot M, Muhangi D, de Vries DH, Mafigiri DK, Katamba A, Parker N and Pool R. Traditional birth attendants (TBAs) as potential agents in promoting male involvement in maternity preparedness: insights from a rural community in Uganda. Reprod Health 2016; 13: 24.
53. Anastasi E, Borchert M, Campbell OM, Sondorp E, Kaducu F, Hill O, Okeng D, Odong VN and Lange IL. Losing women along the path to safe motherhood: why is there such a gap between women's use of antenatal care and skilled birth attendance? A mixed methods study in northern Uganda. BMC Pregnancy Childbirth 2015; 15: 287.
54. Ononge S, Okello SE and Mirembe F. Excessive bleeding is a normal cleansing process: a qualitative study of postpartum haemorrhage among rural Uganda women. BMC Pregnancy Childbirth 2016; 16: 211.
55. Rudrum S. Traditional birth attendants in rural northern Uganda: policy, practice, and ethics. health care for women Int 2016; 37(2): 250-69.
56. Izudi J, Epidu C, Katawera A and Kekitiinwa A. Quality Improvement interventions for nutritional assessment among pregnant mothers in northeastern Uganda Biom Res Int. 2017: 8036535.
57. Maternal and Child Nutrition Study Group, Group members, Black RE, Alderman H, Bhutta ZA, Gillespie S, Haddad L, Horton S, Lartey A, Mannar V, Ruel M, Victora CG, Walker SP and Webb P. Maternal and child nutrition: building momentum for impact. Lancet 2013; 382(9890): 372-5.
58. Clifton A, Repper J, Banks D and Remnant J. Co-producing social inclusion: the structure/agency conundrum. J Psychiatr Ment Health Nurs. Sci Med. 2013; 20(6): 514-24.
59. Abel T and Frohlich KL. Capitals and capabilities: linking structure and agency to reduce health inequalities Soc Sci Med 2012; 74(2): 236-44.
60. Anaf J, Baum F, Newman L, Ziersch A and Jolley G. The interplay between structure and agency in shaping the mental health consequences of job loss. BMC Public Health 2013; 13: 110.
61. Bungay V, Halpin M, Atchison C and Johnston C. Structure and agency: reflections from an exploratory study of Vancouver indoor sex workers. Cult Health Sex 2011; 13(1): 15-29.
62. Uganda. Ministry of Gender, Labour and Social Development: The Uganda gender policy, 2007, 20. http://www.mglsd.go.ug/policies/Uganda-Gender-Policy.pdf. Accessed 18 Jan 2018.
63. UNDP/Uganda. Gender equality strategy, 2014-2017: investing in gender equality for Uganda’s socio-economic transformation, 2016, 14. file:///C:/Users/jnabugoo/AppData/Local/Packages/Microsoft.MicrosoftEdge_8wekyb3d8bbwe/TempState/Downloads/UNDPUg2016%20-UNDP%20Uganda%20Gender%20Equality%20Strategy.pdf. Accessed 18 Jan 2018.
64. UN/Uganda. Report on government of Uganda’s implementation of the Beijing platform for action (1995) and the outcome of the twenty-third special session of the general assembly, 2000, 13. http://www.un.org/womenwatch/daw/Review/responses/UGANDA-English.pdf. Accessed 18 Jan 2018.