

Characteristics of parent-child sexuality communication in Zambia: A cross sectional study of adolescent girls and their parents.

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Acronyms and Abbreviations

AIDS – Acquired Immune Deficiency Syndrome

ASRH – Adolescent Sexual and Reproductive Health

HIV – Human Immunodeficiency Virus

RISE - Research Initiative to Support the Empowerment of Girls

SSA- sub-Saharan Africa

TPB – Theory of Planned Behaviour

UNESCO - United Nations Educational, Scientific and Cultural Organization

UNICEF - United Nations International Children's Emergency Fund

WHO – World Health Organization

Introduction

The sexual and reproductive health of adolescents¹ is a concern in sub-Saharan Africa, where the prevalence of early pregnancy, maternal mortality, unsafe abortions and HIV are disproportionately high. Efforts to improve adolescents' sexual and reproductive health and reduce early pregnancies have tended to focus mainly on the provision of sexuality education and sexual and reproductive health services. Increasingly however, evidence suggests that parents and guardians² can play a vital role in adolescents' sexual and reproductive health; by communicating with their children about sex parents can support and prevent adolescents from engaging in risky sexual behaviour.

Despite convincing evidence on the protective effects that parent-child sexuality communication has on adolescent sexual risk, interventions and evidence from sub-Saharan Africa (SSA) is lacking. This thesis argues that although parent-child sexuality communication may be less common in SSA, it remains a feasible and necessary approach for reducing sexual and reproductive ill-health amongst adolescents in the region. The paper presented for the thesis is intended for submission to 'BMC Public Health' and examines demographic and psychosocial factors which are associated with parent-child sexuality communication. The article presents data from quantitative interviews with Zambian adolescent girls and their parents and based on the results, suggestions for further research and interventions are made. The data comes from the Research Initiative to Support the Empowerment of Girls (RISE); a large cluster randomized controlled trial on preventing early pregnancy, school dropout and child marriage amongst adolescent girls in Zambia.

¹ This text assumes UNICEF's definition of an adolescent; an individual between the age of 10 and 19 years of age

² The terms 'Parent' and 'Guardian' are used interchangeably in the text to refer to the individual(s) who are responsible for caring and providing for the child/adolescent.

Prior to presenting the article, the following introduction presents an in-depth review of the literature surrounding adolescent sexual risk behaviour and the role that parents can play in reducing it. Theories related to health behaviour and a conceptual model of parent-child sexuality communication are presented and used to illustrate how/why communication with parents may impact adolescents' sexual and reproductive health.

Adolescent sexual and reproductive health (ASRH).

Adolescent Sexual and Reproductive Health (ASRH) is a public health concern because sexual behaviours can have both direct and *lasting* impacts on the health and well-being of adolescents. In addition to sexually transmitted infections and HIV, early pregnancy and unsafe abortion are of particular concern for this age group. Globally, pregnancy and childbirth complications are amongst the leading causes of death of 15-19 year old girls [1]. The risks associated with adolescent pregnancy include premature birth, low birth weight and cognitive and developmental difficulties for the child [2]. In addition, early pregnancy typically marks the end of formal education for girls, which subsequently reduces their employment opportunities and increases chances of and/or perpetuates poverty in later life [3, 4]. This not only impacts the adolescent mother, but also places economic strain on her family; a particular burden for already poor families. Indeed these negative implications of early pregnancy contribute to the disproportionately high rates of unsafe abortions amongst teenage girls; every year 3.9 million girls aged 15 to 19 undergo unsafe abortions [5].

ASRH is of particular concern in countries in sub-Saharan Africa (SSA) because, as explained by Izugbara, adolescent sexual and reproductive health in this region, is directly associated with a

‘triple tragedy’ of unwanted teenage pregnancy, unsafe abortions and HIV/AIDS [6]. Amongst girls aged 15-19 years in SSA, there are 101 births per 1000 girls annually [7] and adolescent girls account for 25% of abortions and abortion related deaths in the region [8]. Furthermore, in 2017, 70% of new HIV infections amongst adolescents occurred in sub-Saharan Africa and the majority of these were amongst young women and girls [9].

There are other factors which also contribute to the burden placed on adolescents in the SSA region. For example, the high rates of poverty in the region exacerbate the financial strain that comes with early pregnancies. In addition to this, there seem to be conflicting social and cultural norms around early pregnancy in a number of countries in SSA, which may increase the social burden for adolescent girls in this region. For example, although countries in sub-Saharan Africa have some of the highest incidence of early pregnancy and early marriage in the world [10], “In the African cultural set-up, those who conceive outside marriage are looked down upon and are more likely to face social ostracism, which can also hamper future relationships and development” ([11], pg. 323). Indeed, studies have suggested that in many countries in sub-Saharan Africa, parents feel shame simply at the thought of their adolescent children being sexually active. Furthermore if a girl falls pregnant outside of marriage, she brings shame on to the whole family, often resulting in social sanctions from community members [12, 13]. Simultaneously however, as is the case in Zambia, there is high value placed on fertility and the new born child, regardless of the age or marital status of the mother [14]. Such findings suggest that although teenage pregnancy may be more normalized in SSA than in other regions, the conflicting social implications are added to the burdens of ill-health outcomes and increased economic strain on the adolescent mother. In order to reduce this burden therefore, there is a need to equip adolescents

with the knowledge, skills and services to make safe sexual choices, but there is also a need to challenge the negative association that parents and communities have towards adolescents' sexual behaviour.

In order to address negative attitudes towards adolescents' sexual behaviour, it is first necessary to understand the complexities and discourses that can shape attitudes towards adolescent sexuality- including early pregnancy- in a given context. The discourses and opinions around early pregnancy are influenced by social and cultural norms, but also by political and economic factors; this results in a number of conflicting discourses occurring in parallel. Indeed, this is what was found in a study in rural Zambia; discourses around early pregnancy and schooling were examined through focus groups with parents, teachers, adolescent boys and girls, community health workers and district leaders [14]³. The finding suggests that although early pregnancy and early marriage are described as both moral and development problems, parallel discourses presented early marriage and pregnancy as an acceptable means of ensuring social and economic security for girls. In such cases, parents encouraged adolescent girls to conceive and marry in order to reduce the economic burden on the household and ensure her security. The authors also point out that these less 'politically correct' attitudes towards early pregnancy were less openly presented by the participants and were framed in terms of the opinions of others or 'some people's opinions'. Indeed such findings indicate that despite political will (as is the case in Zambia) and apparent support for reducing adolescent pregnancy in a community, there may be 'hidden' barriers which need addressing. Understanding and changing attitudes surrounding adolescent sexual and reproductive is complex.

³ This was part of the formative research to establish the acceptability of the RISE study

Addressing adolescent sexual and reproductive health concerns

Global efforts to improve adolescent sexual and reproductive health have predominantly focused on the provision of adolescent-responsive services and Comprehensive Sexuality Education (CSE) in schools [15]. From a public health perspective, the concern is not that adolescents are engaging in sex, but that they are engaging in *risky* sexual behaviour; including early sexual debut, low condom use and high rates of partner change [16]. This is why CSE and the provision of services has been the immediate response, but also why a number of low and middle-income countries where adolescents lack access to sexuality education and services, also report low levels of sexual health amongst adolescents[17]. Indeed, such trends has led to specific action in certain low-income regions; for example, in 2013 a number of governments in East and Southern Africa (ESA) made national-level commitments to step up the efforts to ensure young people have access to good quality CSE and youth friendly services[18].

Influences on adolescent sexual behaviour

Although CSE and sexual and reproductive health services are vital to improving adolescents' sexual and reproductive health, these approaches do not address other important factors that can influence the sexual behaviour of adolescents. As stated by Jaccard et al, "If there is one thing that social science research has made abundantly clear, it is that the factors that influence sexual risk behaviours are numerous and complex" ([19], p.g.13). According to Bronfenbrenner's Social Ecological Model[20], behaviour is affected by the interplay between personal and environmental factors. In the context of adolescent sexual behaviour, Chung et al [17] use this model to classify the external factors that influence adolescent pregnancy. As seen in Figure 1, the framework highlights three external domains: family, friends, and school/community, which interacts with and influences self- status and behaviour. Within each of the three domains, the authors identify

specific risk and protective factors for adolescent pregnancy. Within the ‘school/community’ domain, *lack of sexuality education* is a risk factor but *female secondary enrolment* is a protective factor. Within the ‘friends’ domain, *belief that most friends are pregnant* is a risk factor and in the ‘family’ domain, *mother giving a birth during her adolescents* is a risk. Conceptualising influences in this way, illustrates that in addition to providing education and services, the actions and attitudes of others has an influence on adolescent sexual and reproductive health.

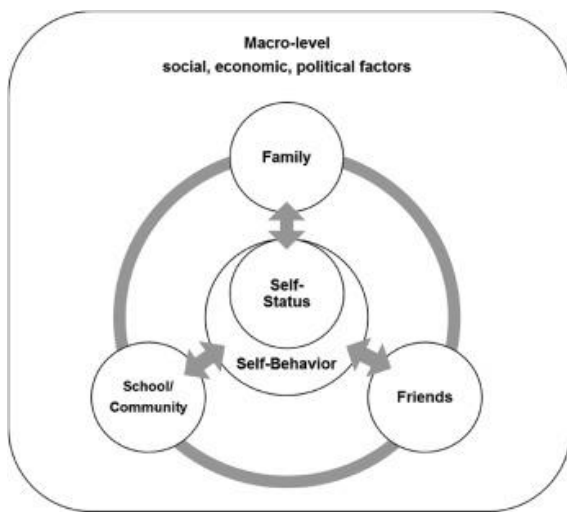


Figure 2 Multilevel approach to adolescent pregnancy, adapted from [17], pg 181.

The influence that friends and family have on adolescent sexual behaviour can be further explained using the Theory of Planned Behaviour (TPB) [21]. As children transition through puberty and adolescence, their understanding and perceptions regarding sexual behaviours are formed. Similar to the Social Ecological model, the TPB highlights the importance of environmental, as well as individual factors in determining behaviour. However, the Theory of Planned Behaviour further specifies that social norms and the perceived attitudes of significant others, influences one’s intention to behave and subsequently determines behaviour itself (Figure 2). According to TPB therefore, the behaviours of friends and family can influence adolescents’ sexual behaviour because it provides them with vital information about the social norms and attitudes surrounding

sex. Therefore, using the risk factors identified by Chung et al, we can see that if it is normal amongst peers to be pregnant, and if one's mother was pregnant in adolescence, it signals a positive attitude and social norm around unprotected sex and teenage pregnancy amongst the adolescent's significant others and thus increases the likelihood of him/her engaging in such behaviour.

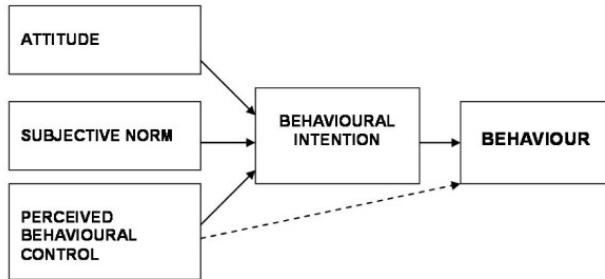


Figure 2 Theory of Planned Behaviour

Parent-child sexuality communication

In addition to signalling norms and attitudes, parents can also influence adolescents' sexual behaviours by communicating directly with them about sexual issues. Through direct communication with their children, parents can provide knowledge, set standards, norms and rules regarding acceptable and safe sexual behaviour. By directly addressing sexual issues in conversations with their children, parents can also challenge false beliefs, perceived norms and negative peer influences which can lead to risky sexual behaviour. For example by explaining the risks of unprotected sex and early pregnancy, a parent can challenge the perceived positive attitudes towards teenage pregnancy amongst his/her peers. Furthermore, if they are able and willing to communicate with their children about sex, parents can formulate messages which are consistent with their familial context and in line with their frame of reference. Parents can also tailor their messages according to the life stage, cognitive capacity, maturity and emotional development of the child [19]. Although public health service providers and teachers are more

commonly considered as the ‘teachers of sexual health’, adolescents may not always have access to these information sources, nor want to access them. Therefore, relative to other information sources, parents are uniquely suited to communicate with their children about sexual health behaviours.

Evidence suggests that parent-child sexuality communication can have a direct influence on adolescent sexual and reproductive health behaviour. Intervention studies, largely from North-America, have shown that when parents are trained to effectively communicate with their children about sexual health, adolescent sexual risk behaviour can be reduced [22, 23]. Outcomes from intervention studies include more accurate sexual knowledge, delay in sexual debut, fewer partners, increased condom use and improved sex negotiation skills amongst adolescents [24-26]. Furthermore, in a study of African American and Hispanic adolescents, parent-child communication around sex and condoms not only delayed sexual debut but also reduced the influence that peer norms had on adolescents’ sexual behaviours [27].

Based on the theories and findings presented above, it is perhaps not surprising that global public health actors are increasingly emphasising the need to include parents in initiatives to address adolescent sexual health. For example, the World Health Organization’s *Global Accelerated Action for the Health of Adolescents* and the *Guidance on Adolescent and Sexual Health and Rights* [28, 29], highlight the need to include parents in the delivery of adolescent health interventions. More recently, UNESCO specifically included parent-child sexuality communication in its *Revised Technical Guidance on Sexuality Education (2018)* [30]. Importantly, these global guidelines also recognize that parents need support if they are to be able to communicate with their

children about sexual and reproductive health. As aptly stated by Jaccard et al, “it seems somewhat naïve that parents will know exactly what factors need to be addressed to alter or prevent risk activity on the part of their children. Parents need help!” ([19], pg 13).

Parent-child sexuality communication: A conceptual model
 Communication about sexual issues between parents and children is a complex process. Whether or not communication leads to behavioural changes depends on aspects of the communication process (e.g. the source, the message, the audience and the channel), as well as the elements which influence and determine behaviour (e.g. attitudes, norms, perceived control). Hereto, studies on the effects of parent-child sexuality communication on adolescent sexual behaviour have used a variety of social and developmental theories to conceptualize the findings; including Social Learning Theory and the Theory of Planned Behaviour. In an attempt to encourage a more standardized approach to research on parent-child sexuality communication, Jaccard et al [19] developed a common theoretical framework which combines the most pertinent elements of each of these theories.

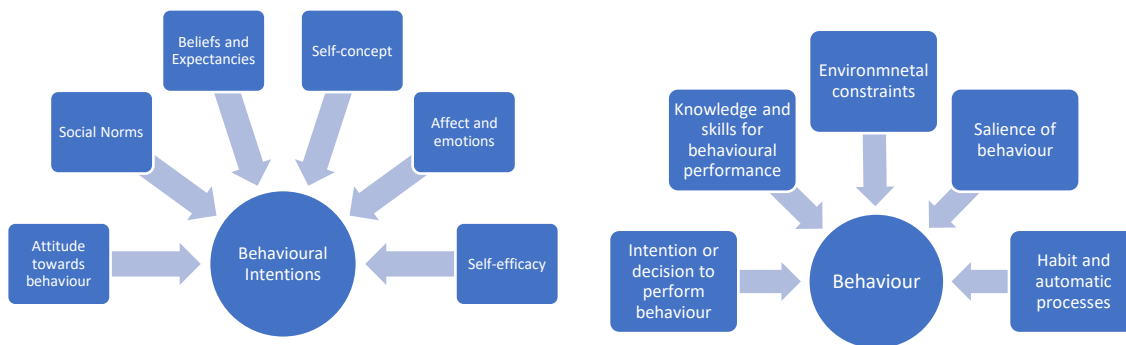


Figure 3 Conceptual framework for parent-child adolescent communication about sex and birth control – Adapted from Jaccard et al [19]

As outlined in Figure 3, the framework represents a more nuanced version of the Theory of Planned Behaviour; it specifies not only the specific factors that influence one's *intention* to behave, but also additional factors that may directly influence behaviour itself. According to this framework therefore, if parental communication addresses rule setting and restrictions of movement (e.g. curfews), it relates to 'environmental constraints', which influence behaviour directly. However, if communication focuses on challenging peer pressures and 'social norms' around risky sexual behaviours, it influences behavioural intentions, which can then influence behaviour. Indeed, such a mechanism could be used to explain the previously presented study which found that parent-child sexuality communication moderated the influence of peer norms and delayed sexual debut amongst African American and Hispanic adolescents[27].

Jaccard et al's framework can also be used to in relation to studies which find no effect of parent-child sexuality communication on behaviour. In such cases it is possible that the nature or quality of parental communication either negatively affects or does not sufficiently impact on the factors that influence intentions and/or behaviours. For example, it has been found that children whose mothers use interactive communication styles when talking to their children about the risks of HIV/AIDS, have a higher level and more accurate knowledge of HIV/AIDS than those whose mothers use an instructive style [40]. Using the conceptual framework, one may argue that the way in which the parent communicates influences the 'knowledge and skills for behavioural performance', which subsequently influences behaviour. In this case, an instructive communication style may have prevented the adolescents from asking questions and clarifying the information provided to them, thus resulting in little and/or inaccurate knowledge about HIV/AIDS and thus little change in behaviour. Therefore, if parent-child sexuality communication is to help

reduce sexual risk behaviour amongst adolescents, it is important to consider not only whether parents are communicating about sex with their children, but also the nature and characteristics of that communication.

Characteristics of parent-child sexuality communication

As a result of the studies on parent-child sexuality communication, there is evidence to support the use of parent-child sexuality communication as a means of reducing sexual risk. However, fewer studies have examined the characteristics and circumstances which influence whether parents and children communicate about sex-related topics at all. Numerous factors can influence the likelihood of parent-child sexuality communication occurring. The relationship between the child and the parent, the attitudes and beliefs of the parent and the child, how comfortable they are in communicating about sex and the style of communication can all affect whether or not parent-child sexuality communication takes place [31]. Therefore, simply encouraging parents and children to communicate about sex may not be enough to make them do so. However, if we understand the factors that increase or decrease the likelihood that parents and children will communicate about sex, efforts to increase parent-child sexuality communication can focus on factors that encourage it. Indeed this is the rationale behind the article presented for this Master's thesis; a better understanding of the specific factors associated with the occurrence of parent-child sexuality communication.

Nature and style of communication

Perhaps the most obvious determinant of whether or not parents and children communicate about sexual issues, is whether they are comfortable in doing so. Conversations around sexual issues are embarrassing by nature and thus the discomfort associated with talking to their children about sex,

prevents parents from doing so. The level of comfort of a parent will relate to factors including their own attitudes, their experiences, as well as their knowledge of the topic and their feelings of self-efficacy. According to the Theory of Planned Behaviour, feelings of discomfort reflects a negative attitude towards sexuality communication which therefore reduces the parent's intentions to engage in it. Both quantitative and qualitative studies have suggested that if parents feel uncomfortable or embarrassed in discussing sexual issues with their children, the likelihood of them doing so is reduced [32, 33]. Conversely, when parents are made to feel more comfortable in sexuality communication (for example through a training), the likelihood of parent-child sexuality communication increases [34, 35]. In addition, how comfortable a parent feels in communicating about sex can also affect the child's attitude towards sexuality communication and his/her beliefs about sex. As noted by Lefkowitz and Stoppa, "By appearing extremely uncomfortable or unable to discuss sex-related topics, parents send a message to their daughters that sex is difficult to discuss, secretive, or dirty" [36], pg 47). Therefore, parental discomfort may not only reduce the chances of sexuality communication occurring but may also distort the messages they relay to their children.

The way in which a parent communicates with the child also has implications for the chances of them communicating about sexual issues. For example, open and interactive communication with clear and direct messages is regarded as the most effective way to communicate about sex. This way of communicating is also more likely to facilitate further discussion and hence better understanding of the issues discussed [26]. Conversely, one-directional and instructive communication from parent to child is less effective and can reduce the intended effect. For example, a study with Latin American mothers found that when mothers dominated sexuality

communication, fewer sexual conversations were reported and adolescents also had lower knowledge of HIV/AIDS [37]. Similarly, using fear-based messages when talking about sex, reduces the likelihood that children communicate with their parents about it [38]. Research on fear-based communication suggests that it may be effective for encouraging one-time prevention behaviours (such as dental check up), but not for encouraging repeated health behaviours (such as safe sex)[39].

The ways in which parents communicate with their children varies according to the topic of communication but also the cultural and social norms of the context. For example, one study found that Latin American are more likely than European-American mothers to dominate the conversations around sex with their children [37]. On the other hand, studies from countries in sub-Saharan Africa (SSA), typically characterize parent-child sexuality communication as authoritarian and relying heavily on fear-based messaging to prevent children from having sex (e.g.[34, 40, 41]). Therefore, when seeking to encourage parent-child sexuality communication, it is important to consider those context-specific factors that are likely to influence it. Not surprisingly, fear-based communication is often cited as one of the barriers to parent-child sexuality communication in countries in SSA [38, 42]. This is perhaps best illustrated with an example from a Kenyan qualitative study which directly quotes a mother's approach to discourage her daughter from having sex; the mother explains that she tells her daughter "she might get cancer because of having a boyfriend and the moment you sleep with that boyfriend, it will enter your womb, cut it in to pieces and then you die."([40], p.g. 38).

The parent-child relationship

The parent-child relationship and the style of parenting have a strong impact on adolescent sexual risk behaviour. Harsh and authoritative parenting styles have been found to be predictive of risky sexual behaviour in adolescents [43] but positive parenting practices - wherein parents are attentive and responsive to their children - is strongly associated with reduced risk behaviour amongst adolescents. Specifically, children who feel 'connected' with their parents are more likely to delay sexual behaviour, use contraception more frequently and have fewer adolescent pregnancies[44, 45]. In this context, 'connectedness' refers to the extent to which a child feels understood by their parent and how responsive they are to their children's feelings and needs [23]. Therefore, it is perhaps not surprising that children who feel connected to their parents are also more likely to speak to them about sensitive issues such as sex [13, 44, 46]. Indeed, the WHO suggests that parent-child connectedness is in fact one of the most important factors associated with children's sexual outcomes and that it is a vital component for communicating about sexual and reproductive health[47].

Parental attitudes

Parents' attitudes towards adolescent sexual and reproductive health can also affect whether and how they communicate with their children about sexual issues. Parents are less likely to communicate with their children about sex if they hold conservative views and if they endorse abstinence [33, 48]. Furthermore, parental attitudes can determine the content of the communication; parents who are averse to condoms and contraception are limited in the advice they can provide regarding safe sexual practices. Indeed, it is for this reason that many have emphasized the need to work with and educate parents to challenge beliefs which may hinder safe sexual behaviour. In sub-Saharan Africa for example, authors have highlighted the need to

challenge specific cultural scripts, including those regarding the irrepressible nature of the male sexual drive[49].

Parental attitudes towards ASRH also differ between countries and cultures and may therefore also have different effects on parent-child sexuality communication. For example, although Poulsen found that both Kenyan and American parents were both more likely to speak to their children about sex if they feel their child is ready [35]; in the study, fewer Kenyan parents reported sexuality communication than American ones. Indeed, this may have been the result of attitudinal differences regarding the appropriate age for communication. However, other studies have also identified parental attitudes which prevent parents from communicating with their children about sex. Findings from a number of countries in the SSA region suggest that parents avoid communicating about sex out of fear that it will promote sexual activity amongst children [6, 13, 50, 51]. A study in rural Tanzania also described a belief amongst parents that children who are in school simply do not have sex and therefore do not need to learn about it[13]. Based on such findings, it is clear that in order to increase and/or improve parent-child sexuality communication, its associations with parents' attitudes in that context, must be considered.

Parent-child sexuality communication in sub-Saharan African: A research gap

Nascent evidence suggests that in countries in SSA, fewer adolescents communicate with their parents about sex than in America; 13% in Burkina Faso - 38% in Uganda [52] versus 30%-70% in USA [33, 53] respectively. One suggested explanation for the low rates of parent-child sexuality communication is that teachings on sexuality issues in African cultures was traditionally through initiation ceremonies and rituals where information is provided from traditional leaders, specified

community members or other family members such as grandmothers or aunts [6, 13]. However, as social structures change, these traditions seem to be dwindling and have left a hole in the sexuality education of adolescents [49, 54]. As pointed out by Izugbara, “A majority of young people in Africa have woefully inaccurate sexuality knowledge.”([6], pg. 575).

Although efforts have been made to step-up the provision of comprehensive sexuality communication in the region, there is also a need to increase the acceptability of discussing adolescent sexual and reproductive health issues and to challenge the barriers which impede parent-child communication about sexual issues [34]. Given the promising results of parent-child sexuality communication interventions (in America), it is possible that it can be an effective addition and/or complement to CSE and ASRH services to reduce sexual risk amongst adolescents in other regions, including SSA. In addition to this, engaging with parents around adolescent sexual risk, provides an opportunity to enhance their knowledge of adolescent reproductive health issues and possibly change the attitudes which prevent them from encouraging safe sexual behaviour.

Although parent-child sexuality communication is a less common approach in Africa [55], evidence from countries within the SSA region have found it to be associated with safer sexual practices amongst adolescents. For example, cross-sectional data from Ghana[56], Uganda [52] and South Africa and Tanzania [57] have associated parent-child communication with greater reports of condom use. In Ivory Coast, parent-child sexuality communication was associated with a reduction of sexual partners amongst adolescents [58]. Despite these promising findings however, there remains a “dearth of evidence from SSA”, on the topic of parent-child sexuality communication ([13], pg 15). In a review of studies between 1980 and 2002, 92% were from

America and the remainder were from Mexico, Canada and Australia[24]. In contrast, a review of the same subject in the SSA region between 1980 and 2011, revealed only 23 studies[42]. Furthermore, of the few studies on parent-child sexuality communication in the region, fewer still have examined the specific characteristics associated with whether or not it takes place; only 4 of the 23 studies in the African review included variables such as communication style and tone of discussion[42].

Study Rationale

If parent-child sexuality communication can reduce adolescent sexual risk, “There is an obvious need to train parents in sub-Saharan contexts...in communicating about sexuality with their adolescent children” ([57], pg 884). However, in order to be culturally relevant, an intervention for parent-child sexuality communication must be based on and include those characteristics of parent-child sexuality communication which are relevant; one cannot assume that the features used in American interventions are equally salient and relevant to parents in sub-Saharan African countries. Based on the reviewed studies from countries in SSA, it seems that parent-child sexuality communication interventions in the region may benefit from placing specific emphasis on several aspects; for example normalizing parent-child communication and challenging negative parental attitudes towards ASRH, as well as encouraging open conversation which avoids fear-based messages to prevent adolescents from having sex. However, before it is possible to make such recommendations, there is first a need to identify the types of characteristics which are associated with parent-child sexuality communication and how.

The paper presented for this thesis is, to the author's knowledge, the first study which looks at the characteristics of parent-child sexuality communication in Zambia. The data is used to explore the effects of several sociodemographic and psychosocial characteristics on the occurrence of parent-child sexuality communication. The characteristics included in the study are parent-child relationship, parental attitudes, adolescents' perceptions of parents' attitudes, as well as communication style and tone of messages. Although qualitative studies have touched upon the role of these characteristics in parent-child sexuality communication, this article presents quantitative findings and uses them to make suggestions for further research and interventions in Zambia and contextually similar countries in the SSA region.

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Academic Paper: Characteristics of parent-child sexuality communication in Zambia: A cross sectional study of adolescent girls and their parents.

Abstract

Background: Parent-child sexuality communication has been shown to reduce risky sexual behaviour amongst adolescents. Risky sexual behaviour is of particular concern in sub-Saharan Africa (SSA) where the prevalence of early pregnancy, unsafe abortion and HIV are high. Parent-child sexuality communication may be a feasible approach for reducing sexual risk amongst adolescents in SSA but limited research exists from the region. This study examines the sociodemographic and psychosocial factors that are associated with whether or not parents communicate with their daughters about sexual issues in Zambia, a country in SSA.

Methods: The data stem from a cluster randomized controlled trial to examine the effect of interventions for reducing teenage pregnancy and school drop out in Zambia. Data were collected between January-July in 2008 and consists of responses to interviews with 4333 adolescent girls (from 157 schools) and 3864 parents. Cross sectional analyses, using pooled data from the three study arms, examined the sociodemographic and psychosocial variables associated with parent-child sexuality communication. Uni- and multivariate logistic regressions were used and odds ratios are reported.

Results: Adolescent girls who felt connected to their parents and those who perceived their parents to be comfortable in communicating about sex, were more likely to speak to their parents about sexual issues than those who did not. Girls whose parents used fear-based communication about sexual issues, and those who perceived their parents as being opposed to education about

contraception, had lower odds of communicating with their parents about sex. Girls out of school had higher odds of communicating with their parents about sex than those enrolled in school.

Conclusion: The results are in line with studies on the characteristics associated with parent-child sexuality communication in other sub-Saharan African countries; including the role of responsive parenting and fear-based communication styles. Trainings which assist parents to communicate with their children about sex, may benefit from encouraging parents to convey non-judgemental attitudes, use open communication styles with neutral messages, whilst appearing comfortable and displaying positive attitudes towards communication around sex and contraceptive use.

Key Words: Adolescents, Parents, Communication, Sexual and Reproductive Health

Background

Adolescent⁴ Sexual and Reproductive Health (ASRH) has received growing attention in public health policies over the last two decades [59]. Adolescents' sexual behaviour has both direct and *lasting* impact on their health and well-being. In particular, *risky* sexual behaviour – characterized by early sexual debut, low condom and contraceptives use and high rates of partner change [16] - is high on the global public health agenda. This is because early pregnancy and increased risks of childbirth complications are amongst the leading causes of death amongst 15-19 year old girls [1]. Furthermore 3.9 million girls aged 15 to 19 years undergo unsafe abortions every year[5]. In addition to these negative health outcomes, the socio-economic consequences of early and unintended pregnancy are of great concern; early pregnancy curtails girls' educational attainment

⁴ This text assumes UNICEF's definition of an adolescent; an individual between the age of 10 and 19 years of age

which has direct implications on their prospects for entering the workforce and thus places considerable economic strain on the family.

In sub-Saharan Africa (SSA), ASRH is of particular concern. The high rates of HIV amongst adolescents in this region, means that risky sexual behaviour is directly linked to the ‘triple tragedy’ of HIV/AIDS, unwanted teenage pregnancy and unsafe abortions [6]. In 2017, 70% of new HIV infections amongst adolescents occurred in sub-Saharan Africa, the majority among young women and girls [9]. Whereas the global average for adolescent births was 44 per 1000 girls aged 15-19 in 2018 [60], the annual average in SSA is 101 per 1000 [7]. Furthermore, 15-24 year old girls account for 25% of abortions and abortion related deaths in the region [8]. In addition to this, the high rates of poverty and lack of social protection mechanisms in many countries in SSA means that the overall socio-economic strain of early pregnancies is amplified in this region. Considering that adolescents in sub-Saharan Africa carry a disproportionately high burden of sexual and reproductive ill health [3], there is a clear need to support and empower adolescents in this region to avoid risky sexual behaviours.

The HIV epidemic in SSA sparked efforts to address adolescent sexual health, including increased provision of adolescent-responsive sexual health information and services and more recently, the introduction of Comprehensive Sexuality Education (CSE) in schools[15]. Although these are important and relevant strategies, they do not typically make use of the role that parents and guardians can play in shaping adolescents’ knowledge, beliefs and behaviours regarding sex [13, 61]. Indeed it is for this reason that international organisations such as UNESCO and WHO are now placing more emphasis on involving parents in adolescent sexual health (e.g.[30]).

Parental influence on adolescent sexual behaviour

Parents⁵ can influence adolescent sexual behaviour not only through monitoring and restricting their actions, but also through communicating their own attitudes and beliefs to their children. As outlined in the Theory of Planned Behaviour (TPB, [21]), behaviour is influenced by an individual's own beliefs and abilities, as well as broader social norms and the perceived attitude of 'significant others'. In terms of sexual behaviour, parents represent (very) 'significant others' who can influence adolescents' behaviour by modelling safe sexual behavioural norms such as keeping one sexual partner and/or frequent use of sexual health services (e.g. STI screening). In addition, by conveying positive attitudes towards safe sexual behaviour, for example positive views towards condom use, parents relay social norms around contraceptive use, which in turn can shape the child's behaviours.

Parent-child sexuality communication

Parents can also impart knowledge and skills around safe sexual practices by communicating directly with their children about sexuality issues. Indeed, a number of studies in North-America have shown that parent-child communication about sexuality issues is associated with improved sexual knowledge as well as increased and consistent condom use, delayed sexual debut, reduced number of partners and improved sex negotiation skills amongst adolescents [25, 26, 42]. Nascent evidence from countries in sub-Saharan African have shown similar results; parent-child communication has been associated with greater condom use in Uganda [52], South Africa and Tanzania [57] and in Ivory Coast, parent-child sexuality communication was associated with a reduction of sexual partners amongst adolescents [58]. Furthermore, a systematic review of studies

⁵ The terms 'Parent' and 'Guardian' are used interchangeably in the text to refer to the individual(s) who are responsible for caring and providing for the child/adolescent.

in SSA countries concluded that a lack of parental guidance and sexuality communication is in fact a determinant of adolescent pregnancy in the region [62].

Given the protective effects that parent-child sexuality communication can have on adolescent sexual risk, it seems possible that it can also be used to complement existing strategies for reducing adolescent sexual risk behaviour in other countries and regions, including sub-Saharan Africa. Indeed, randomized controlled trials in North-America have shown that interventions specifically aimed at improving parents' knowledge and skills to communicate with their adolescents about sexuality issues, can significantly reduce adolescent sexual risk behaviour [22, 63]. Furthermore, Blake et al [64] found that the effects of school-based prevention programs can be augmented by adding a parent-child communication component to it. Therefore if parents are motivated, willing and equipped with the necessary knowledge and skills, they have the potential to increase accurate sexual knowledge and hence promote safe sexual behaviour amongst their children. By communicating with their children about sexual issues, parents can also challenge any false beliefs or misconceptions which may lead to risky sexual behaviour; for example peer pressures to have sex.

Although there is demonstrable evidence for the effects of parent-child sexuality communication, the evidence is largely restricted to the 'global north'. A review of studies on parent-child sexuality communication between 1980 and 2002, showed that 92% came from North-America, the remaining 8% came from Mexico, Canada and Australia[24]. Thus, as Wamoyi points out, there remains a "dearth of evidence from SSA" on the effects of parent-child sexuality communication, ([13], pg 15). However, evidence is starting to emerge which suggests that in sub-Saharan Africa,

HIV interventions which include parent-child sexuality communication have positive effects on the rates of communication as well as children's knowledge about HIV [34, 54, 65]. Although promising, there is a need to build on this evidence to better understand the ways in which parents communicate with their children about sex and how the use of parent-child sexuality communication can be increased in the context of sub-Saharan Africa.

Studies suggest that in countries in SSA, fewer adolescents communicate with their parents about sex than in America; 13% in Burkina Faso -38% in Uganda [52] versus 30%-70% in USA [33, 53] respectively. Many argue that this is due to the cultural taboos surrounding adult-child communication about sex in the region. For example qualitative studies in Tanzania and Nigeria, suggest that secrecy and shame associated with pre-marital sex prevents parents from initiating communicating about sexual issues. Studies also show that parents are concerned that if they speak to their children about sexual issues, they will encourage them to engage in it [6, 13, 42, 49, 66]. Despite these findings however, both parents and adolescents in several studies from SSA have expressed the need for more communication about sexual issues in the home [6, 13, 42, 67, 68]. For example, a study of Nigerian mothers showed strong beliefs that parents should be involved in their child's sexuality education [69] and in Tanzania, adolescents have suggested that parent-child sexuality communication may be an effective means of reducing teenage pregnancies [11]. Considering that there is both rationale and will for increasing parent-child sexuality communication, the next step is to understand the factors that affect whether or not it actually happens.

Factors associated with parent-child sexuality communication

Whether or not parents communicate with their children about sexual issues can be affected by several factors, both sociodemographic and psychosocial. Depending on social, political, economic and cultural contexts, the factors which influence attitudes around adolescent sexual and reproductive health are also likely to vary. However, evidence suggests that across countries and cultures, parent-child sexuality communication is more frequent amongst female parents and girl children and that the likelihood of communication increases with the age of the child [24] [12, 13, 56, 67, 70, 71]. Conversely, amongst North-American samples, the association with parental education and socio-economic status show mixed results [24] whereas in African studies, there seems to be some consistency; parents with higher socio-economic status [67, 72, 73] and higher levels of education [32, 69, 72] are more likely to communicate with their parents about sexual issues. Studies in SSA countries also include certain variables which are not typically referenced in American studies, such as rural versus urban living and the child's school enrolment status. In Tanzania for example, in-school adolescents reported more parent-child sexuality communication than those out of school, and those living in rural areas were more likely to report sexuality communication with parents than those in urban areas [73].

Studies have also examined some of the psychosocial characteristics associated with parent-child sexuality communication. Parents' attitudes towards adolescent sexual and reproductive health issues can impact on whether or not parent-child sexuality communication occurs and what information is relayed. For example, parents with conservative attitudes towards adolescent sex, i.e. those who do not feel their children are ready to learn about sex and those who endorse abstinence, are less likely to communicate with their children about sexual issues [33, 35, 48]. Similarly, when discussing sexual matters, there is a tendency for parents to focus on issues such

as abstinence, sexual risk and fidelity as opposed to more direct and detailed sex topics [26, 34, 74]. Parents are also less likely to discuss condoms and contraceptives (than for example puberty and/or abstinence) with their children and this is particularly evident in studies from African countries [57, 75].

Parents' communication style and the way they relay messages is also associated with the occurrence of parent-child sexuality communication. Topics around sex and sexuality are inherently private and thus embarrassing and uncomfortable to talk about. This discomfort has implications for how messages are relayed by parents, but also how they are perceived by children. As noted by Lefkowitz and Stoppa, "By appearing extremely uncomfortable or unable to discuss sex-related topics, parents send a message to their daughters that sex is difficult to discuss, secretive, or dirty" [36], pg 47). It is not surprising that parental discomfort is one of the most widely cited barriers to parent-child sexuality communication (e.g. [76, 77]) and indeed the reason why many ASRH interventions specifically incorporate means of increasing parent's knowledge, skills and comfort in sexuality communication (e.g. [34, 35]).

Communication which is open and interactive with clear, neutral and non-threatening messages is the most effective way of encouraging communication about sensitive issues such as sex [26]. Conversely, one-directional and instructive communication which uses fear tactics to prevent sexual activity, is more likely to prevent communication and may result in overall rejection of the message being communicated [37, 78]. Studies in sub-Saharan African countries typically describe parents' communication with their children about sex as asymmetric, authoritarian and fear-based in nature (e.g. [34, 40, 41]). This fear-based messaging is also cited as one of the reasons

for the low rates of parent-child sexuality communication in the region [38, 42]. However, these claims are based on a limited number of qualitative studies [41, 79, 80] and thus far, no studies have empirically assessed the association between parents' use of fear-based communication and whether or not parent-child sexuality communication takes place.

Finally, communication can also be influenced by the nature of the relationship between the parent and the child. Positive parenting practices - wherein parents are attentive and responsive – creates feelings of connectedness to parents. Parent-child connectedness is strongly associated with reduced risk behaviour amongst adolescents [44, 81] and with regards to reducing sexual risk behaviour, it is argued to be one of the most important influencing factors for adolescents [44, 55, 82]. Although few studies have examined the influence of parent-child connectedness on sexuality communication, studies suggest that by communicating with their children about sexual issues, parents show that they care for and are concerned for their children. As cited in a qualitative study in Tanzania “only parents with love chat with their children” (adolescent girl [13], pg 12).

The present study

There is reason to believe that parent-child sexuality communication can reduce the sexual risk behaviour of adolescents. Therefore, it is possible that parent-child sexuality communication can also be used in countries in sub-Saharan Africa to bolster existing efforts to improve adolescent sexual and reproductive health. To do so, however, a greater contextual understanding of the factors that are associated with parent-child sexuality communication in SSA is needed. By studying parent-child sexuality communication in a country which is more representative of a sub-Saharan African context (than North America), it may be possible to gain a better understanding

of the factors that can inform efforts and interventions to increase parent-child communication in similar contexts. This study aims to examine the associations between sociodemographic and psychosocial characteristics and whether or not parents communicate with their daughters about sexual issues. Analyses are based on a sample of adolescent girls and their parents in rural Zambia and the findings are discussed in terms of how they may inform efforts to increase sexuality communication.

ASRH indicators in Zambia are in line with the regional trend of poor sexual and reproductive health amongst adolescents in SSA. In 2012, there were 141 births per 1000 girls between 15-19 [60] and adolescent childbearing rates are higher in rural than in urban areas [83]. Although maternal mortality is lower than the regional average (224 per 100,000 live births in Zambia, versus 542 regional average), the pregnancy related mortality ratio among 15–19 year old girls is 80% higher than among those aged 20–24 [83]. In addition, the rate of new HIV infections amongst 15-19 year olds in 2016 was higher amongst girls than boys [84]. Zambia is also one of the countries in the region whose government has expressed explicit interest in reducing early pregnancy and improving adolescent sexual and reproductive health [15]. However, as in a number of other countries in SSA, Zambia has high rates of early marriage; 31% of women aged 20-24 years were married before the age of 18 and 6% before the age of 15 [85]. An analysis of discourses around early pregnancy and marriage in rural Zambia have also shown that although early pregnancy is seen as a moral and economic problem, it is also considered as a valued and necessary means of ensuring social and economic security for girls [14]. In addition, as in other sub-Saharan African countries, high customary value is placed on fertility and children in Zambia.

Methods

Study Context

This study is based on cross-sectional data from a large cluster randomized controlled trial on preventing early pregnancy, school dropout and child marriage amongst adolescent girls in Zambia (RISE: Research Initiative to Support the Empowerment of Girls). RISE is a collaboration between the University of Bergen and the University of Zambia (UNZA). In 2016 a total of 4922 girls enrolled in grade 7 were recruited from 157 rural schools in 12 districts in the Southern and Central provinces of Zambia. The chosen districts had medium rates of school drop-out and adolescent marriage and childbearing were common. All girls enrolled in grade 7, including those who were married and/or with children were eligible for the study.

The RISE trial has three study arms: 1) intervention with economic support, 2) intervention with economic support combined with youth club and parent/community meetings focused on adolescent sexual and reproductive health, and 3) control. In the combined arm (2), youth clubs provide comprehensive sexual and reproductive health education to in and out-of-school adolescents; delivered by teachers and community health workers. The community meetings are targeted at parents and the wider community members and address issues around adolescent sexual and reproductive health and girl empowerment, including the importance of communicating about sexual health issues. Full details of the trial can be seen in the study protocol [86].

Procedure

Participants of the RISE project were followed-up every 6-months with comprehensive interviews regarding schooling status, reproductive health, sexual behaviour, childbearing and contraceptive use. Interviews were carried out by young, female research assistants between the ages of 17 and

25. All data collectors were trained in appropriate interview techniques for adolescent respondents, including confidentiality, sensitivity and how to make respondents feel at ease and comfortable. Given the age group (adolescents) and topics being covered (sexual issues), specific emphasis was placed on displaying empathy and neutral attitudes.

The questions for the interviews were developed jointly by the Zambian and Norwegian research teams and were piloted prior to each interview round. All questionnaires were developed in English and translated and back translated in to the four dominant languages of the study sites; Tonga, Nyanja, Bemba and Lenje. The language of the interview was decided by the respondent, with most choosing one of the local languages.

Participants and data

The data for this article is derived from the 4th follow-up interview round, collected between January-July 2018 when the intervention had been implemented for 1.5-2 years. The 4th interview round included questions relating to the girls' experiences of communicating with their parents about sexual issues and their perceptions of their parents' attitudes. The parents and guardians of the girls were also interviewed in the 4th round. Parents' interviews covered sociodemographic topics and included questions on their attitudes towards adolescent sexual and reproductive health, sexuality education and contraceptive use. All girls and parents who responded to the relevant questions were included in the analyses.

Measures

Occurrence of parent-child sexuality communication

The dependent variable for the study was whether or not girls communicated with their parents about sexual and reproductive health issues. Girls' reports of sexuality communication was used because past studies have shown that parents tend to over-report the extent to which they communicate with their children about sex [87]. Girls were asked "How many times have you talked about romantic relationships or sexual issues (including abstinence, sex, condoms and contraceptives) with your guardians?", response options were "5 or more times" (1), "2-4 times" (2), "once" (3) or "never"(4). A dichotomous variable was created '*Ever communicated with parents about sexuality*' (1= Yes, 0= No); answers on the first three options were recoded as "Yes" and the fourth, "Never" was recoded as "No".

Sociodemographic variables

The sociodemographic variables for girls included age and school enrolment. For parents, variables included age, sex and level of education. Parental level of education was grouped in to three levels, 'Primary school and/or no formal education'; 'Secondary level'; 'Diploma and/or university'.

Psychosocial variables

A total of seven psychosocial characteristics from parents' (three variables) and girls' (four variables) interviews were examined. Variables related to the nature of the parent-child relationship, style of parents' communication, parents' attitudes and daughters' *perceptions* of parental attitudes. Response formats for the questions varied between "Yes/No/I don't know" and 5-point scales "strongly agree; agree; neither agree nor disagree; disagree; strongly disagree". For the items with five response options "Strongly agree" and "agree" were coded as 'Yes'; "Neither

agree nor disagree” was coded as ‘Don’t Know’ and “Disagree” or “Strongly disagree” were coded as ‘No’.

Parent-child connectedness

The extent to which girls perceive their parents to be caring, interested and responsive to them [44] was measured. The variable ‘*Girl’s Connectedness*’ was based on girls’ level of agreement with the statement “When I speak to my parents/guardians about my problems or worries, I feel they really understand me”.

Parental comfort in sexuality communication

Parents’ comfort in sexuality communication was measured from parent’s self-reports as well as girls’ perceptions of their parents comfort. ‘*Parents’ Comfort*’ indicated parents’ self-reported response to “Do you feel comfortable talking to your daughter about romantic relationships and sexual issues?”. ‘*Girl’s perceived parental comfort*’ measured girls’ responses to the statement “My parents/guardians are comfortable with speaking to me about romantic relationships and sexual issues”.

Fear-based communication

The variable ‘*Girl-reported fear-based communication*’ assessed whether the girls felt that parents used fear-laden messages in their communication about sexual issues. This was based on the girls’ level of agreement with “When my parents speak to me about romantic relationships and sexual issues, I feel that they try to scare me”.

Parental attitudes

Three variables refer to parental attitudes towards adolescent sexual and reproductive health – two were self-reported in parent interviews and one from girl’s interviews. ‘*Parent’s daughter ready for SRH education*’ was based on the question, “Do you think your daughter is ready to learn about sexual and reproductive issues?”. ‘*Parent’s perception of contraceptive harm*’ was based on “Do you think it is harmful for a girl who has reached puberty and who is sexually active but not married to use contraceptives, for example injections/pills?”. The third variable assessed girls’ *perception* of parents’ attitudes; ‘*Girl perceives parent as objecting to contraception education*’ was based on responses to “My parents or guardians think it is harmful for me to learn about condoms and other contraceptives.”.

Data Analysis

Pooled data from parents and girls in all of the three study arms was used for the analyses; STATA software version 15.1 (Stata Corporation, College Station, TX, USA) was used. Robust standard errors were included in all analyses to account for the cluster design. Univariate and multivariable logistic regressions were used to test the associations between the occurrence of parent-child sexuality communication and the independent variables described above. To control for sociodemographic variables, three separate models were run; Model 1 included sociodemographic variables only, Model 2 included psychosocial variables only and Model 3 combined all of the variables which were associated with parent-child sexuality communication in Models 1 and 2. The crude and adjusted odds ratios (AOR) with 95% confidence intervals are reported for all of the associations. To test for the level of agreement between parents’ self-reported level of comfort and girls’ perception of parental comfort, inter-rater reliability analysis using Cohen’s Kappa was carried out.

Ethics

Ethical clearance for the RISE study was obtained from the University of Zambia Biomedical Research Ethics Committee (ref no 021- 06-15) and the Regional Ethics Committee of Western Norway (ref no 2015/895) before the start of the trial in 2015. Participation was voluntary and all girls enrolled in grade 7 in 2016 were eligible to participate, including those who were married or pregnant. For girls under 18, parents were asked to give consent and thereafter the girl was asked to assent; girls over the age of 18 were asked to consent directly. Appropriate procedures for data handling and confidentiality were followed; interviews were carried out using password-protected electronic tablets, and data was downloaded to a secure server (owned by the University of Bergen). Interview responses were not stored together with names and contact details, each participant was given a unique identifier number used for storing forms.

Results

Descriptive results

Table 1 Sample Characteristics

GIRLS' CHARACTERISTICS	
N	4333
In School	
Yes	3810 (88%)
No	523 (12%)
Mean Age	15.4 (IQR:15-16)
Ever communicated with parents about sexuality	
YES	1517 (35%)
NO	2816 (65%)
PARENT CHARACTERISTICS	
N	3864
Sex	
Male	868 (23%)
Female	2979 (77%)
Parent's level of education	
Primary or none	2149 (56%)

Secondary level	1469 (38%)
Diploma or University	246 (6%)
Relationship to child	
Parent	2771 (78%)
Guardian	545 (15%)
Other	248 (7%)

Table 2 Response to psychosocial variables

PSYCHOSOCIAL VARIABLES	Yes	No	Don't Know
<i>Girls' Measures</i>			
Girl's connectedness	3301 (76%)	916 (21%)	114 (3%)
Girl-reported fear-based communication	2090 (48%)	2102 (49%)	139 (3%)
Girl's perceived parental comfort	1953 (45%)	2301 (53%)	76 (2%)
Girl perceives parent as objecting to contraception education	2154 (50%)	2056 (47%)	121 (3%)
<i>Parents' Measures</i>			
Parent's comfort	2855 (75.6%)	905 (24%)	14 (0.4%)
Parent's daughter ready for SRH education	2145 (57%)	1494 (39%)	137 (4%)
Parent's perception of contraceptive harm	2230 (59%)	1438 (38%)	101 (3%)

A total of 4333 girls with a mean age of 15.4 were interviewed. Of the girls interviewed, 86.9% were currently enrolled in school and 35% had ever communicated with their parents about issues relating to sexual and reproductive health. As shown in Table 2, the majority of girls reported connectedness with their parents (76%), nearly half reported that their parents used fear-based communication and half perceived their parents to be against contraception education. A slight minority of the girls perceived their parents as comfortable when communicating about sexual issues.

Of the 3864 parents/guardians interviewed, the majority were female and most had education levels at either primary school or below. Most parents reported being comfortable when communicating about sex-related issues with their children and more than half (59%) believed that

contraceptives are harmful for girls. A slight majority of parents believed that their daughters were ready to learn about SRH issues.

When including all parental respondents, inter-rater reliability analysis showed a weak level of agreement between parental self-reported comfort and daughter's perception of parental comfort ($K = 0.0394$, $p < 0.05$) [88]. Separate analyses were carried out for the different groups of respondents – 'parents', 'guardians' and 'other' – as well as males and females. Amongst the three groups, although weak, only parents' self-reported comfort had a statistically significant level of agreement with daughters' perception of comfort ($k = 0.0431$, $p < 0.01$). Similarly, only female guardians' self-reported comfort had a weak but significant level of agreement with daughters' perception of their comfort ($k = 0.0406$, $p < 0.01$).

Cross-sectional associations between variables

The odds ratios for the univariate and multivariable logistic regression analyses are shown in Table 3. The sociodemographic variables alone (Model 1), accounted for 0.75% of the variance in occurrence of parent-child sexuality communication. Girls' school attendance was the only sociodemographic variable which was associated with the occurrence of parent-child sexuality communication (AOR = 0.57, CI = 0.45-0.73); out of school girls were more likely to communicate with their parents about sexual issues (46.6%) than those who were in school (33.4%). Girls' age was associated with sexuality communication in the univariate regression (OR = 1.07, CI = 1.02-1.12), but not when it was combined with the other variables. With regards to parents' level of education, the results suggest that parents with higher level of education (Diploma or university

level) had lower odds of communicating with their children about sexual issues than those with secondary school education level.

The psychosocial variables alone (Model 2) accounted for 6% of the variation in parent-child sexuality communication. However, only the variables assessed from the girls' interviews showed a significant association with occurrence of parent-child sexuality communication. The strongest association was observed with girls' perception of parents' comfort; those who perceived their parents to be comfortable in sexuality communication had 2.85 times higher odds (CI=2.37-3.43) of communicating with them about sexuality issues than those who did not. Girls reporting connectedness to parents were more likely to communicate with them about sexuality issues than those who did not (AOR=1.24, CI= 1.04-1.48)). Those girls who were unsure about the level of connectedness with their parents ('don't know'), were also more likely to communicate with their parents than those who responded 'no' (AOR= 1.80, CI=1.12 – 2.88). Conversely, girls who indicated that their parents use fear-based communication about sexuality, were less likely to report parent-child sexuality communication than those who did not report fear-based communication (AOR 0.72, CI= 0.63-0.83); those responding 'don't know' to the question about fear-based communication also had lower odds of communicating than those who did not (AOR= 0.52, CI = 0.34 – 0.79). The girls who perceived their parents as objecting to contraceptive education were less likely to communicate with them about sexual issues (AOR= 0.69, CI=0.59-0.81).

The combination of sociodemographic and psychosocial variables (Model 3) accounted for 7% of the variance in parent-child sexuality communication. The five variables associated with

occurrence of parent-child communication in the combined model were: ‘girls’ school attendance’, ‘girl’s connectedness’, ‘girl-reported fear-based communication’, ‘girl’s perceived parental comfort’ and ‘girl perceives parent as objecting to contraception education’. All variables which were associated with parent-child sexuality communication in Models 1 and 2, were also associated with the dependent variable in Model 3.

Table 3. Associations between occurrence of parent-child sexuality communication and sociodemographic variables (Model 1), psychosocial variables (Model 2) and sociodemographic and psychosocial variables (Model 3).

	Ever communicated with parents about sexuality (%)	Crude Odds Ratio (CI 95%)	Model 1 Adjusted Odds Ratio (CI 95%) Pseudo R ² =0.0075	Model 2 Adjusted Odds Ratio (CI 95%) Pseudo R ² =0.0604	Model 3 Adjusted Odds Ratio (CI 95%) Pseudo R ² =0.0708
Sociodemographic Variables					
Girl age		1.07 (1.02-1.12)**	1.03 (0.98-1.09)		
Girl in school					
Yes	33.4%	0.57 (0.46-0.70)***	0.57 (0.45-0.73)***		0.56 (0.45-0.69)***
No	46.6%	Ref.	Ref.		Ref.
Sex of parent					
Female	35.7%	0.98 (0.83-1.15)	1.00 (0.85-1.19)		
Male	36.1%	Ref.	Ref.		
Parent’s education level					
Primary or none	35.3%	Ref.	Ref.		
Secondary level	37.1%	0.97(0.87-1.08)	1.12 (0.97-1.29)		
Diploma or University	29.3%	0.75 (0.55-1.02)	0.82 (0.60-1.13)		
Psychosocial Variables					
<i>Girls’ Measures</i>					
Girl’s connectedness					
Yes	35.8%	1.24 (1.04-1.48)*		1.23 (1.01-1.51)*	1.21 (1.03-1.45)*

No	31%	Ref.		Ref.	Ref.
Don't Know	44.7%	1.80 (1.12-2.88)*		2.01 (1.21-3.34)**	1.75 (1.10-2.76)*
Girl-reported fear-based communication					
Yes	31.7%	0.72 (0.63-0.83)***		0.75 (0.64-0.88)**	0.75 (0.65-0.87)***
No	38.9%	Ref.		Ref.	Ref.
Don't Know	25.2%	0.52 (0.34-0.79)**		0.63 (0.39-1.01) [†]	0.63 (0.41-0.96)*
Girl's perceived parental comfort					
Yes	49.3%	3.21 (2.71-3.81)***		2.85 (2.37-3.43)***	3.09 (2.62-3.66)***
No	23.2%	Ref.		Ref.	Ref.
Don't Know	26.3%	1.18 (0.63-2.20)		1.18 (0.63 – 2.22)	0.91 (0.49-1.69)
Girl perceives parent as objecting to contraception education					
Yes	30.9%	0.69 (0.59-0.81)***		0.77 (0.64-0.92)*	0.78 (0.66-0.92)*
No	39.1%	Ref.		Ref.	Ref.
Don't Know	37.2%	0.92 (0.60-1.40)		0.73 (0.42-1.25)	0.85 (0.55-1.31)
<i>Parents' Measures</i>					
Parent's comfort					
Yes	35.5%	0.97 (0.81-1.16)		0.86 (0.70-1.05)	
No	36.1%	Ref.		Ref.	
Don't Know	35.7%	0.98 (0.32-3.01)		0.84 (0.24-2.90)	
Parent's daughter ready for SRH education					
Yes	36.8%	1.13 (0.96-1.32) [†]		1.10 (0.93-1.31)	
No	34%	Ref.		Ref.	
Don't Know	35.2%	1.05 (0.71-1.55)		1.02 (0.67 – 1.57)	
Parent's perception of contraceptive harm					

Yes	35.5%	0.98 (0.84-1.14)		0.99 (0.85-1.16)	
No	35.9%	Ref.		Ref.	
Don't Know	37.5%	1.06 (0.66-1.71)		0.96 (0.59-1.58)	

*p<.05. **p.01. ***p<.001.

To further examine the association between school going and sexuality communication, a post-hoc multivariate logistic regression was carried out between school-going status (dependent variable) and age and sexual debut (yes/no). The results suggest that both age and sexual debut was associated with school enrolment. That is, in-school girls were younger (AOR =0.64, CI=0.58-0.72) and less likely to have had their sexual debut than those out of school (AOR=0.045, CI=0.03-0.06).

Discussion

Within this sample, 35% of girls had communicated with their parents about romantic and/or sexual issues and those out of school were more likely to have done so. Neither the girls' age, sex of the parent, or parents' education level were (significantly) associated with whether parent-child sexuality communication took place. However, girls who felt understood by their parents (connected) were more likely to communicate with them about sexual matters than those who did not feel understood. Likewise, girls who thought that their parents were comfortable in communicating about sexual issues, were also more likely to have communicated with them about such topics. However, those girls who felt that their parents were opposed to them learning about contraception (versus not) and those whose parents used fear-based communication around sex (versus not), were less likely to have communicated with them about sex. The self-reported attitudes of parents (towards adolescent sexual and reproductive health) were not associated with

the occurrence of parent-child sexuality communication. Although there was a weak level of agreement between self-reported parental comfort and daughters' perception of parental comfort, this was only significant for parents (as opposed to guardians/others) and when the parent/guardian was a female. Although cross sectional data do not allow for causal inference, the results suggest that the nature of the parent-child relationship and the way in which parents communicate with and convey their attitudes towards sexual issues, can have an effect on the likelihood of them communicating with their children about sex-related topics. Considering the limited evidence coming from Zambia and other countries in sub-Saharan Africa, these findings may be useful when designing further research and/or interventions to promote parent-child sexuality communication in the region.

The proportion of adolescent girls reporting parent-child sexuality communication in this sample (35%) is comparative to findings from other countries in sub-Saharan Africa; for example 30% in Malawi and 38% in Ghana [52]. In comparison to boys, parents are more likely to communicate with girls about sexual issues [12, 56, 61]. Amongst other reasons, this is likely a reflection of the disproportionate risks associated with sexual behaviour for girls, including health risks of early pregnancy, school drop-out and social stigma [67]. Although rates of parent-child sexuality communication are reportedly low in sub-Saharan Africa, these results – in combination with those from other countries in the region - suggest that some parents *are* communicating about sexual issues with their children and thus there may be scope for increasing both the amount and quality of it. As Jaccard et al state, “Researchers should not be discouraged by, but rather should embrace the challenge of the complexity of the phenomena and should resist premature statements about the lack of promise of parent-based approaches” ([71, pg. 35).

The findings confirm that the quality of the parent-child relationship plays an important role in whether or not parents and children communicate about sexual issues; a child who feels that her parents understand her problems is more likely to be open with them about sensitive issues, such as sex [46]. Although few studies have directly demonstrated the association between connectedness and the occurrence of parent-child sexuality communication, Roller et al explain that in order to achieve effective communication with their children, parents must show interest and understanding for the child's feelings[89]. Indeed, this link was demonstrated in a randomized controlled trial in South Africa, which showed that when the parent-child relationship was strengthened, it also increased the frequency of parent-child communication about HIV/AIDS and sexuality issues [65]. Findings such as these suggest that efforts to encourage parent-child sexuality communication may benefit from including strategies which strengthen parent-child connectedness. As argued by Namisi et al, this may be particularly relevant when training parents in sub-Saharan African countries to communicate with their children about sexuality issues [57].

When girls perceived their parents to be comfortable talking about sex, they were three times more likely to communicate with them about it, than those who did not. Although this confirms previous findings on the importance of parental comfort in parent-child sexuality communication, the fact that parents' self-reported comfort was not associated with parent-child sexuality communication is of interest. Although 75% of parents reported being comfortable in sexuality communication, they were not more likely to communicate with their daughters about sex than those who were not. One explanation could be socially desirable responding; parents may be over-stating their comfort level because they do not want to appear as if they are intimidated by their own children. However, another explanation may be that the child's *perception* of the parent's comfort is in fact more

important than whether the parent him/herself feels comfortable. This interpretation can also be applied to the finding that none of the parents' self-reported attitudes were associated with the occurrence of sexuality communication, but the girls' *perception* of parents' attitudes was. If interpreted through the Theory of Planned Behaviour, a child's behaviour can be influenced by how s/he perceives the attitudes of the parent [21]. Furthermore, in contexts where open and direct communication between parents and children is less common (as in parent-child sexuality communication), when making decisions about their own behaviour, adolescents may rely more on their perceptions of their parents' attitudes than on what their parents communicate to them directly.

Few studies have quantitatively measured the association between the child's *perception* of their parents' attitudes and the likelihood of them communicating with their parents about sex. Although several interventions, including the RISE study, address parents' attitudes towards adolescent sexual and reproductive health, it may be that children's perceptions of their parents' attitudes is equally important with regards to communicating about sexual issues. In addition to challenging parents' negative attitudes towards sexuality communication and helping them to feel more comfortable in doing so, helping them to convey positive attitudes and appear more comfortable (for example body language and communication skills), may increase the chances of their children discussing sexual issues with them.

Fear is often cited as a barrier in parent-child sexuality communication and the results from this study support such claims. In sub-Saharan Africa in particular, qualitative studies have found that that fear-based messages and a fear of physical punishment prevents adolescents from speaking to

their parents about sexual issues (e.g. in Nigeria and Kenya [40], Ghana [90] South Africa [34] and Tanzania [13]). This barrier can be overcome as a number of interventions have demonstrated; parents' communication styles can be changed from passive-aggressive communication to assertive and direct messages in sexuality communication [34] [35, 91]. If, as the results of this study suggest, fear-based messages are associated with less likelihood of parent-child sexuality communication, efforts to increase parent-child sexuality communication in SSA countries (which are contextually similar to Zambia), will benefit from helping parents to formulate and convey more neutral and open messages about sexual issues. Furthermore, this may be particularly important for parents communicating with girls. Whereas parents' communication with boys around sex is focused on warnings about the implications of sex, girls are more typically encouraged to avoid sex entirely and thus parents may be more prone to using fear-based messages when communicating with them [92]. Indeed future studies using mixed samples will be able to examine whether there are discrepancies in the use of fear-based messaging depending on the gender of the child.

Girls' perceptions of parents' attitudes to contraception education, were associated with whether they communicated about sexual issues with them. The objection to and/or fear of modern contraceptives is a commonly observed narrative in the SSA region [93] and studies have shown that condoms and contraception are less likely to be discussed between parents and children than topics around puberty, abstinence or HIV [6, 13, 33, 50, 51, 67, 75, 94]. This is often attributed to cultural beliefs and practices, but in many cases may be the result of lack of knowledge about contraception amongst parents (e.g.[13, 93]. This avoidance to discussing contraception with children is concerning and needs to be addressed as it is central to promoting safe sexual behaviour,

regardless of age. With regards to parent-child sexuality communication, interventions and research should focus on effective ways in which to impart accurate knowledge, open attitudes and encourage parents to address contraception in communication with their adolescents.

The finding that out-of-school girls were more likely to communicate with their parents contradicts previous studies from surrounding countries. For example in a study in Tanzania, girls in school reported more HIV communication with parents than those out of school [73]. However a number of studies in Kenya, Tanzania and Nigeria also suggest that misconceptions amongst parents prevent them from talking to their children about sex whilst they are in school ([6, 13, 66]). These studies found that parents tend to believe that girls who are in school do not have sex and thus do not need information about it[13]. Parents were also more likely to speak to their children about sex when they are older, reach puberty/menses and/or when parents suspect they have romantic relationships and exhibit signs of engaging in sexual behaviour[35, 46, 71]. The results of the post-hoc analysis suggest that out-of-school girls (who reported more sexuality communication), were also more likely to be older and more likely to have engaged in sex than those in school. This provides some support for concerns that unless adolescents are exposed to sexuality education at an early age in school, parents may be communicating with their children about sex when it is too late to delay sexual initiation and prevent risky behaviour [95]. For example, findings from urban adolescents in secondary school in Ghana, suggest that of those who were sexually experienced, 25% had their first sexual intercourse at age 11 or younger and by the age of 16, 64% had had sex[56]. Based on such figures, it seems that parent-based adolescent sexual health interventions will benefit from emphasizing the need for initiating conversations about sexual issues at an early age, perhaps especially so in rural areas and where school-enrolment is low.

A number of studies in countries in SSA have considered parental education status in parent-child sexuality communication and found that those with higher educational level are more likely to communicate with their children about sexual issues[67, 72, 73]. Results from this study are suggestive of a tendency amongst parents with the highest-level of educational attainment (diploma or university) to have lower odds of communicating with their children about sex than those with secondary-school level. This is an interesting finding and brings questions as to whether parents above a certain educational level (secondary) are less likely to communicate with their children about sexual issues. However, it also calls to question whether the parents reporting diploma or university education, are in fact representative of parents with higher educational attainment. Considering the rural sample, it is possible that socially desirable responding goes some way in explaining this counterintuitive finding.

Limitations

The cross-sectional nature of the analyses in this study does not allow for causal inferences between the independent and dependent variables. However, the results do provide us with an indication of the characteristics of communication that are worth investigating further. This will be possible using data from future rounds of follow-up interviews from the RISE project, as they become available. These data will also allow us to examine how parent-child sexuality communication is related to sexual debut and contraceptive use amongst girls. These analyses will be possible in 2020, when the RISE project comes to an end.

Grouping the response options from five-points to three options (Yes/No/I don't know) reduced the level of detail of the data. In addition, measuring complex constructs such as comfort and parent-child connectedness using only one scale item, is likely to have implications for the

precision and validity of the constructs measured. By using tested and validated scales (using multiple questions) to measure the psychosocial constructs, a more nuanced understanding of the construct would have been possible. Although the number of additional interview items that could be included in the RISE follow-up was restricted, future studies have the possibility to study these characteristics more in-depth.

The data for this research comes from an intervention study in which more than two thirds of the sample were exposed to conditions aimed at reducing adolescent sexual risk behaviour; this may have implications for how representative the findings are. In particular, the girls and parents in the combined intervention arm were directly exposed to activities aimed at sensitizing them on aspects of safe sexual behaviour for adolescents; youth clubs for girls and community meetings for parents. This exposure to open discussions around sexual issues may have implications for the rates of parent-child sexuality communication reported; the proportion of 35% may be higher than that average amongst Zambian girls and parents. Exposure to the intervention may also have impacted on parents' attitudes towards adolescent sexual health; parents in this sample may hold more positive attitudes than average. Alternatively, exposure to the intervention may also have increased the likelihood that parents responded in a socially desirable manner and therefore their reported attitudes did not reflect their true opinions. It will be possible to assess the impacts of the intervention on parent-child sexuality communication when the RISE project comes to an end.

It is unclear whether the parental respondent was in fact the one who the girl communicates with about sexual issues. If the parental respondent was not the one who communicates with the girl about sexual issues, it may explain the reason for the low level of agreement between parents' and

girls' assessment of parental comfort. This could also give meaning to the lack of association between the parent reported characteristics/attitudes and the occurrence of parent-child sexuality communication. Future studies which include the child and parent's opinions/attitudes, should also determine whether the parent being interviewed is the one with whom the child is most likely to communicate with about sexual issues.

All the interview questions were designed with local experts and piloted before implementation. However, the risk of socially desirable responding is ever-present in self-reported data and especially so when studying sensitive issues. In addition, the data for this study was collected using face-to-face interviews which may have increased the chances of socially desirable responding. In consecutive follow-up rounds of the RISE study, numerous steps have been taken to reduce socially desirable responding, including the use of Audio Computer Assisted Survey Instruments (ACASI).

Finally, the all-female sample in this study prevents the generalizability of the findings to all adolescents. Given that parent-child sexuality communication has been found to be consistently lower amongst males, further studies are needed to establish whether the associations vary between males and females. Any differences found may inform the ways in which parents can increase sexuality communication with their sons and daughters.

Conclusion

This study contributes to the sparse evidence on parent-child sexuality communication in Zambia and the sub-Saharan Africa region. To the authors' knowledge, it is the first to examine parent-child sexuality communication in Zambia and the findings confirm that Zambian parents are

speaking to their children about sexuality issues. However, findings also confirm that fear-based communication is being used by parents and it reduces the odds of children speaking to their parents about sex. Furthermore, children's perceptions of their parents' attitudes – and possibly indirect communication from parents - seems to be an important factor which has not received much attention in the parent-child sexuality communication literature. Given the potential that parent-child sexuality communication may have in reducing adolescent sexual risk, the findings suggest the need to address those cultural norms that prevent parent-child sexuality communication in Zambia and other countries in sub-Saharan Africa [34]. Although in-depth analysis is required to better understand the local attitudes and discourses around adolescent sexual and reproductive health in Zambia; the results from this study suggest that interventions to increase the likelihood of parent-child sexuality communication may benefit from encouraging parents to convey non-judgemental attitudes and use open communication styles which do not use fear to discourage adolescents from having sex. Interventions may also benefit from considering the ways in which parents are perceived by their children when they communicate with them about sex.

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Annexes

1. RISE fourth round follow-up interview: Girls
2. RISE fourth round follow-up interview: Parents
3. RISE Study Protocol
4. Ethical clearance for RISE (a, b, c)
5. Submission guidelines: BMC Public Health- Preparing your manuscript