PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Exploring Healthcare Providers' Perspectives of the Pediatric Discharge Process in Uganda: A Qualitative Exploratory Study
AUTHORS	Nemetchek, Brooklyn; Khowaja, Asif; Kavuma, Anthony; Kabajaasi, Olive; Owilli, Alex; Ansermino, J; Fowler-Kerry, Susan; Jacob, Shevin; Kenya-Mugisha, Nathan; Kabakyenga, Jerome; Wiens, Matthew

VERSION 1 - REVIEW

REVIEWER	Premila Webster Nuffield Department of Population Health University of Oxford
REVIEW RETURNED	16-Feb-2019

GENERAL COMMENTS	The title - Smart Discharges for Children: Exploring Healthcare Providers' Perspectives of the Paediatric Discharge Process in Uganda suggests that discharge processes and summaries may contribute to increase in mortality rates in the post discharge period. This study is purported to collect 'data on the paediatric discharge process from the perspective of the healthcare provider'. It is not clear how this study using a qualitative methodology meets the objectives outlined. The details of the data collection methods and analysis is limited. The synthesis and interpretation of the Focus Group and in-depth interviews also appears inadequate. There is no integration with prior research or substantial and appropriate evidence to substantiate analytic findings. The results seem to suggest that financial resources and access to health care rather than discharge processes may contribute to issues related to increase in mortality rather than discharge processes. The conclusion that 'the need for a standardized national policy coupled with appropriate community referral and follow-up and education as essential to improving outcomes for children' does not ring true. Perhaps the focus may need to be on the reasons why the burden of under-five mortality continues. If patients and public were included in this qualitative study, it is possible that the conclusions may be that not a standardised national policy for discharge but appropriate and affordable access to health care may be an important contributor to improve health in the under-fives.

REVIEWER	Laurel Legenza University of Wisconsin–Madison School of Pharmacy
REVIEW RETURNED	13-Mar-2019

GENERAL COMMENTS	Thank you for the opportunity to review this article. I read it with great interest. The article identifies key areas for policy change and education on pediatric discharges in Uganda. I agree with the authors conclusions that while the barriers are not insignificant, the motivation for change from participants is inspiring. The article identifies both simple and complex (infrastructural) opportunities for improvement. The barriers are consistent with other low resource settings and should be addressed with future interventions to reduce post discharge morbidity and mortality. The recognition and request for standardized guidelines should be widely accepted and support ongoing work in this area. This qualitative data is applicable to other low resource settings, especially areas of Sub-Saharan Africa where improvement is critically needed, and the level of detail and expansiveness of the study to include multiple public and private settings supports publication. Strategies that may address socioeconomic, human resources, and cultural barriers identified may be applicable to other areas. As the SMART discharge program is of interest to the authors please indicate in the background if the included hospitals already part of and/or familiar with the SMART discharge program? Was the invitation to participate sent/made to selected providers from hospital's human resources department or all eligible providers? Please include in the discussion a comment on variability of the interview length of time. Consider moving 'Five a-priori themes became the framework for initial analysis, from which sub-themes and concepts' to the Analysis section. This methodology appears to be missing there. The statistics on practical experience are very helpful and consistent with other African hospitals having many young physicians in training. I appreciated the quotations in text to support the results, especially those illuminating the complexity and sometime ethical dilemmas faced by providers and challenges in low resource settings. However, the article is still lengthy and opportunity to make results more concise should be taken. I recommend reducing word count where possible. Another suggestion is to consider headings that reoriented the reader to overarching sections (ex. Barrier: xyz).

	What, if any, specific strategies were used to reduce bias of the researchers already working on post-discharge research in Uganda? Please expand on this in the manuscript.

REVIEWER	James Berkley KEMRI/Wellcome Trust Research Programme, Kenya
REVIEW RETURNED	30-Apr-2019

GENERAL COMMENTS	This is a topic which is emerging as a major contributor to child mortality in resource-poor areas. Much focus is on inpatient care, whilst it is likely that at least 50% of deaths occur post-discharge. The manuscript is therefore timely and of interest to a broad readership. The manuscript is well-written and accessible, with clear aims and is a good starting point for further research. I have minor comments only: - Strengths and limitations should specify the work was at referral hospitals rather the district or secondary hospitals (a factor regarding follow up may be that patients live further away from these than their local hospitals). - The section tradition and culture is really about their perceptions of community culture, was there anything on the tradition and culture within hospitals? E.g. ability to question a doctor or nurse, or expectations that by discharge the problem is solved/cured, or that interns providing care may rotate every 3 months and not be familiar with guidelines or needs (we have experienced new interns discharging patients without understanding their treatment plans or underlying problems)? - Is pressure from families for early discharge perceived as a problem? Mothers may have other children to look after, responsibilities and be losing income whilst in hospital.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Premila Webster

Institution and Country: Nuffield Department of Population Health - University of Oxford

Please state any competing interests or state ‘None declared’: Nil

1. The title - Smart Discharges for Children: Exploring Healthcare Providers’ Perspectives of the Paediatric Discharge Process in Uganda suggests that discharge processes and summaries may contribute to increase in mortality rates in the post discharge period. This study is purported to collect ‘data on the paediatric discharge process from the perspective of the healthcare provider’. It is not clear how this study using a qualitative methodology meets the objectives outlined.

Thank you for pointing out the limitation in our title. We have updated our title to better reflect this study. Our new title is: “Exploring Healthcare Providers’ Perspectives of the Pediatric Discharge Process in Uganda: A Qualitative Exploratory Study”.

Thank you also for the second component of this question, that it is not clear how this study, using a qualitative methodology, is able to meet the outline objectives. Through this qualitative study we

aimed to better understand the discharge process from the healthcare workers perspective. We believe that a qualitative approach is an appropriate way to better understand the processes and perspectives of healthcare providers who are responsible for the provision of the discharge process. The current status of the (primarily quantitative) evidence is clear: post-discharge mortality is a significant contributor to overall child mortality. While this does not specifically lead to the conclusion that the discharge process is inadequate and indeed contributory to the burden of post-discharge mortality, a closer look at this quantitative evidence clearly demonstrates that the solution, to at least a degree, rests on an improvement in the discharge process. An improvement in the discharge process, in turn, requires a better understanding of not only what happens, but what those who implement discharges understand about various components of this process. We have made some amendments to our introduction to reflect some of this; please refer to track changes.

2. The details of the data collection methods and analysis is limited. The synthesis and interpretation of the Focus Group and in-depth interviews also appears inadequate. There is no integration with prior research or substantial and appropriate evidence to substantiate analytic findings.

Thank you for these comments. We appreciated that we may not have included some relevant details of the data collection methods or analysis (the manuscript was already quite lengthy). As was included in this submission, we have included the standards for reporting qualitative research (SRQR), but based on this comment we have now added some additional detail according to the consolidated criteria for reporting qualitative research (COREQ) guidelines, and have now included this 32-item checklist for interviews and focus groups as an additional file for your review. Specifically, we have added the following (please refer to track changes as follows):

a) Pg. 9: “FGs and in-depth interviews were conducted by a trained research assistant (AKa or OK) using pilot-tested semi-structured interview guides consistently applied across interviews (Additional file 1). The two Ugandan interviewers, one male and one female, were hired for this specific project and had no involvement in previous Smart Discharges research or personal relationship to the study participants. Repeat interviews, and participant data checking were not conducted.”

b) Pg. 9: “FGs and in-depth interviews were recorded and transcribed verbatim by two interviewers (AKa and OK) and then spot-checked for consistency by another member of the investigative team (BN).”—we added the identity of the interviewers and spot-checker, which allows for the reader to be able to see their qualifications and gender.

c) Pg. 9: under the heading “Data Collection”: “No other participants dropped out.”

d) Pg. 10: The standards for reporting qualitative research (SRQR) criteria was utilized in reporting findings.

e) Pg. 9: All FGs and in-depth interviews were conducted in a private hospital meeting room with no non-participants present after obtaining written informed consent from participants.

f) Pg. 9: … were conducted across the seven study sites, together with seven in-depth interviews with hospital administrators from six study sites in order to reach data saturation.

Thank you also for your comment regarding integration of prior research and evidence. You may find that although prior research has been identified and referenced in the discussion to support our findings, that it is indeed limited. Indeed, issues around the discharge process in LMIC settings are poorly reflected in current global health literature. This serves to further validate the need for research not only on the subject of discharge and post-discharge care, but further highlights the fact that

research into the perspectives of healthcare staff in these low-resource settings have been grossly neglected thus far.

3. The results seem to suggest that financial resources and access to health care rather than discharge processes may contribute to issues related to increase in mortality rather than discharge processes.

We fully agree with your comment that financial resources and access to healthcare are huge indicators of mortality. Indeed, separating financial barriers from the discharge process itself is difficult since these often overlap significant, as clearly outlined in the themes on Barriers/Challenges, Ideas for change and less directly indicated in others. While some financial challenges relate to the patients and their families specifically, system challenges such as limited human and facility resources, limited staff training in discharge procedures, a lack of robust discharge guidelines and policies all impact the ability of a facility to provide optimal discharge care. Regardless, however, of these challenges, the aim was not to determine which factors are associated with mortality, but rather to explore these factors themselves. Additional research will be required to determine if any work to address these challenges can actually improve mortality outcomes after discharge. Certainly, this is a complicated issue with many intersecting contributors.

4. The conclusion that 'the need for a standardized national policy coupled with appropriate community referral and follow-up and education as essential to improving outcomes for children' does not ring true.

Thank you for your honest comment. Guided by our experience, and emerging findings of this study, we respectfully disagree with this assertion. The results from this study clearly demonstrate that the discharge process is not a carefully planned and systematic process. Our argument is based on key fundamentals that (1) the discharge point reflects a time when children are extremely vulnerable, where 1 in 20 die within several weeks and (2) that most of these children receive no systematic follow-up care and (3) more importantly, that those most likely to die, die without any further contact with the health system, suggests that a more systematic approach, beginning with guidelines reflecting both current epidemiologic evidence as well as addressing current practices and barriers, are essential to begin to address this currently unaddressed epidemic in child mortality.

5. Perhaps the focus may need to be on the reasons why the burden of under-five mortality continues. If patients and public were included in this qualitative study, it is possible that the conclusions may be that not a standardised national policy for discharge but appropriate and affordable access to health care may be an important contributor to improve health in the under-fives.

Thank you for your comment. We agree that the perspective of parents and public would contribute much valuable information, and indeed we have an ongoing study specifically addressing this need. We hope to publish this later in 2019. However, suggesting that the only solution is one of access to care is short sighted since access alone does not address the specific unique vulnerabilities during the post-discharge period. Our work suggests that the post-discharge period reflects a unique period of vulnerability, much different than is experienced by non-discharged children in the community. Indeed, a growing body of evidence suggests that severe infectious illness is associated with a prolonged period of immune dysfunction and heightened vulnerability. Even in high income countries, where access to health care is much better, children with severe infectious illness experience significant morbidity and a sustained period where they have a much higher rate of readmission and need for intensive care than those with no prior admission. Parents, health workers and policy makers are generally unaware of this and consider a discharged child who was admitted with pneumonia or diarrhea, for example, to be "cured". This assertion is far from the truth, since the convalescent period for this child will be weeks or months during which time this child is very vulnerable and needs an evidence-based follow-up and care plan. This understanding, coupled with a contextual

understanding of pediatric care in LMIC settings, suggests that guidelines and policies are a key (although not the only) component of improving post-discharge care.

Reviewer: 2

Reviewer Name: Laurel Legenza

Institution and Country: University of Wisconsin–Madison - School of Pharmacy

Please state any competing interests or state 'None declared': None declared

1. Thank you for the opportunity to review this article. I read it with great interest. The article identifies key areas for policy change and education on pediatric discharges in Uganda. I agree with the authors conclusions that while the barriers are not insignificant, the motivation for change from participants is inspiring. The article identifies both simple and complex (infrastructural) opportunities for improvement. The barriers are consistent with other low resource settings and should be addressed with future interventions to reduce post discharge morbidity and mortality. The recognition and request for standardized guidelines should be widely accepted and support ongoing work in this area. This qualitative data is applicable to other low resource settings, especially areas of Sub-Saharan Africa where improvement is critically needed, and the level of detail and expansiveness of the study to include multiple public and private settings supports publication. Strategies that may address socioeconomic, human resources, and cultural barriers identified may be applicable to other areas.

Thank you for your review and feedback.

2. As the SMART discharge program is of interest to the authors please indicate in the background if the included hospitals already part of and/or familiar with the SMART discharge program?

Thank you for pointing out the potential impact of hospitals being familiar with the Smart Discharge program. Although four of the seven hospitals have been focuses of mostly epidemiological research, that research has been conducted by research team staff not employed by the hospitals themselves. Therefore, although staff at four of the hospitals may have been aware of the project, these staff were in no way involved in any of our Smart Discharge research and thus unlikely to be significantly biased towards our perspectives on these issues. In order to communicate this clarification in the paper, an addition to the limitations part of the discussion has been made:

Pg 23: "Related to this, four of the seven hospitals have been study sites for post-discharge epidemiology research, although none had been involved in any interventional studies involving discharge care. Although no hospital staff were involved in this research, an increased awareness of the perceived importance of discharge outcomes may have influenced their responses."

3. Was the invitation to participate sent/made to selected providers from hospital's human resources department or all eligible providers?

Thank you for your comment about how participants were invited to the study, which is indeed an important component to be included. I believe you will find part of this information within our manuscript, under the heading 'Sampling and Inclusion Criteria for Focus Groups and In-Depth Interviews". We have added content about information indeed being sent to all eligible providers.

Pg 8: "Initial contact with all eligible study participants was through each respective hospital's human resources department."

4. Please include in the discussion a comment on variability of the interview length of time.

Thank you for your identification of the varying encounter length as a possible limitation. A sentence has now been added to the discussion:

Pg. 24: “Thirdly, although length of interviews and focus groups varied, duration of encounters was not determined by the facilitator; thus, interactions were terminated on the basis of participants having nothing further to identify or contribute.”

5. Consider moving ‘Five a-priori themes became the framework for initial analysis, from which sub-themes and concepts’ to the Analysis section. This methodology appears to be missing there.

Thank you for your comment. Please refer to track changes in the analysis sections as follows:

Pg. 9: “Relationships generated between five a-priori key themes are depicted using a conceptual framework (Figure 1), from which further sub-themes emerged (Figure 2) in an effort to better understand the pediatric discharge process.”

6. The statistics on practical experience are very helpful and consistent with other African hospitals having many young physicians in training.

Thank you for your comment.

7. I appreciated the quotations in text to support the results, especially those illuminating the complexity and sometime ethical dilemmas faced by providers and challenges in low resource settings. However, the article is still lengthy and opportunity to make results more concise should be taken. I recommend reducing word count where possible.

Thank you for your comment in regards to our word count. We agree that the perspective gained from the quotations and description provided by our participants provide a depth to the analysis that is difficult to maintain within a shortened word count.

8. Another suggestion is to consider headings that reoriented the reader to overarching sections (ex. Barrier: xyz).

Thank you for this suggestion, which we have added to the manuscript. As advised, we have included the revised headings for the barriers as well as the ideas for change.

9. What, if any, specific strategies were used to reduce bias of the researchers already working on post-discharge research in Uganda? Please expand on this in the manuscript.

Your comment regarding how bias was addressed by researchers is indeed important, and further information has thus been added in to the main manuscript.

Pg. 9: “FGs and in-depth interviews were conducted by a trained research assistant (AK or OK) using semi-structured interview guides consistently applied across interviews (Additional file 1). The two Ugandan interviewers, one male and one female, were hired for this specific project and had no involvement in previous Smart Discharges research.”

Reviewer: 3:

Reviewer Name: James Berkley

Institution and Country: KEMRI/Wellcome Trust Research Programme, Kenya

Please state any competing interests or state ‘None declared’: None declared

1. This is a topic which is emerging as a major contributor to child mortality in resource-poor areas. Much focus is on inpatient care, whilst it is likely that at least 50% of deaths occur post-discharge. The manuscript is therefore timely and of interest to a broad readership. The manuscript is well-written and accessible, with clear aims and is a good starting point for further research. I have minor comments only:

Thank you for your feedback.

2. Strengths and limitations should specify the work was at referral hospitals rather the district or secondary hospitals (a factor regarding follow up may be that patients live further away from these than their local hospitals)

Thank you for your comment. This is indeed an important consideration. We recognize that follow-up at the referral hospitals as opposed to lower-level health facilities is likely to be much more difficult for patients who live further away. We believe that follow-up ought to be completed at facilities nearby the home of the patient, regardless of the facility of admission. Although this can address issues around access, we do recognize that this does remains problematic as many of these lower level facilities have important gaps in providing effective post-discharge follow-up (as do larger referral sites). Addressing this gap is much more difficult for the hundreds of lower level facilities as compared to the dozens or referral hospitals. Nonetheless, we believe utilizing the entirety of the health system is required to achieve maximal impact in improved discharge outcomes. Please refer to track changes as follows:

Pg 22: “Post-discharge follow-up for the most vulnerable children is a key component of this program. Although this study utilized referral hospitals, which may often be difficult for rural patients to access following discharge, this program leverages lower level facilities to conduct follow-up care through a unique “back-referral” program.”

3. The section tradition and culture is really about their perceptions of community culture, was there anything on the tradition and culture within hospitals? E.g. ability to question a doctor or nurse, or expectations that by discharge the problem is solved/cured, or that interns providing care may rotate every 3 months and not be familiar with guidelines or needs (we have experienced new interns discharging patients without understanding their treatment plans or underlying problems)?

Thank you for this important insight, which are indeed small component part of the interview findings. Although these very well could have been addressed as part of the heading, “Tradition and Culture”, we instead put those specific findings under other subheadings headings. There certainly is overlap, and could have been classified differently. However, the issue you raise regarding intern physicians is discussed in subheadings: “Lack of hospital resources”. In regard to your comment about the ability to question a doctor or nurse, although it may be significant and indeed present, that particular concept was not identified in the interviews by the participants themselves.

Having said this, your point is well taken, and we will do our best to add a component specific to workplace culture to our future work. This is likely an important area of study that is needed to improve discharge and post-discharge care.

Is pressure from families for early discharge perceived as a problem? Mothers may have other children to look after, responsibilities and be losing income whilst in hospital.

Thank you for your comment- Yes , premature discharge was identified as a problem. This was discussed in the manuscript under “Barriers/Challenges”- Socioeconomic cost to patients and families:

Both private and public hospitals frequently talked about discharging children prematurely or against medical advice, often due to the caregiver’s request. This decision was largely related to the financial burden that families experience in caring for their hospitalized child or due to the need to care for other children at home. “Sometimes you want to keep the patient for a longer time but they are unable, they are unwilling to stay. So… you make a decision that is not called for and you discharge them prematurely” (Clinician 1).

VERSION 2 – REVIEW

REVIEWER	James Berkley KEMRI/Wellcome Trust Research Programme, Kenya
REVIEW RETURNED	06-Jul-2019

GENERAL COMMENTS	My comments have been adequately addressed