Author’s response to reviews

Title: LIFESPAN AND ASSOCIATED FACTORS OF PERIPHERAL INTRAVENOUS CANNULA AMONG INFANTS ADMITTED IN PUBLIC HOSPITALS OF MEKELLE CITY, TIGRAY, ETHIOPIA, 2016

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Author’s response to reviews:

To

The Editor-in-Chief,

BMC Nursing Research Journal

Sub: Submission of original revised manuscript

Dear Editor:

With reference to the above, please find my submission of revised manuscript entitled with “Lifespan and associated factors of peripheral intravenous cannula among in infants admitted in public hospitals of Mekelle city, Tigray, Ethiopia” for possible publications with a point-by-point response to the comments of reviewers, all comments are incorporated in the revised manuscript as much as possible but all comments which need clarification are listed below.
Reviewer 1 comment

1. line 38: define infiltration

2. line 33: What is downstream activity

3. line 41: Why have you chosen lifespan as your measure and not device failure or complications? A shorter lifespan is not always an indication of failure but could be due to a short period of treatment. In your data collection tool, you have collected the reason for failure (dislodgement, complication and blocked). Have you considered a multivariate analysis for risk factor associated with PVC failure? I think this would be the most interesting outcome

4. Methods: Line 60: was this a cross sectional study or a prospective cohort study?

5. Methods: line 3: please explain your systematic random sampling?

6. line 7: Please define what continuous follow up means?

7. Results: line 47 and 49: this does not appear to be a median and inter quartile range but a mean and standard deviation?

Page 5: line 21: this does not appear to be a median and inter quartile range.

line 32: this does not appear to be a median and inter quartile range.

8. line 34: What is the difference between maintenance fluids and infused continuously?

9. TABLE 5: I do not understand how you have calculated crude odds ratio.

10. I also don't see the value of measuring the life span of the PVC. As I mentioned earlier many factors influence lifespan and on table 2 you have identified that 42 PVCs were removed without complication - was this due to the completion of treatment? This is almost 1/4 of your participants and has an impact on dwell time. I recommend that you look at risk factors associated with device failure.

11. Discussion

line 37: I think this sentence is pointless. The PVCs lifespan is of course reduced is the PVC has a site complication or dislodges. Please rewrite. I also don't understand how dislodgement of the PVC is influenced by PVC insertion? would it be more likely to be influenced by dressing and securement?
Response for reviewer 1 comment

1. Infiltration occurs when an IV fluid or medication accidentally enters the surrounding tissue rather than the vein.

2. Once PIVC fails or removed untimely it demands re siting as well as re insertion of the cannula all the way through the same procedure during initial insertion time, this is defined as downstream activity

3. According to recent recommendations PIVC in infants should stay as long as possible, until completion of treatment. therefore, those cannulas who failed before the completion of treatment are taken as device failure either due to dislodgement, complication or blockage but those cannulas removed with an indication or after completion of treatment are included in the variable DC without complication (treatment completion). And we try to show not only factors which shortens the lifespan of PIVC but also factors which prolong the lifespan of PIVC in order to follow the recommendation and to improve patient’s outcome.

4. It is prospective cohort study

5. A total of 178 participants from 2 hospitals were included using a systematic random sampling technique with every other interval (K=N/n, 301/178=2) until the predetermined sample size was obtained. The first eligible infant was selected using the lottery method.

6. It is to mean that the overall data collection activity was monitored daily based by supervisors and principal investigator.

7. Since the distribution of scores for the dependent variable (lifespan of PIVC) is not normally distributed or skewed, therefore the lifespan of PIVC should be described using median and interquartile range. And the same is true for number of attempt to insert and year of experience of nurses since the data is not normally distributed.

8. Maintenance fluid and infused continuously are totally different. Maintenance fluid refers to a type of fluid which contains normal saline, dextrose with water(DW) and dextrose but continuous infusion is indicates the administration type of fluid and there are two ways of fluid administration such as continuous and intermittent

9. Crude odds ratio is calculated using SPSS bivariate analysis.

10. The main objective of this study was not only the factors associated with untimely removal of PIVC but also factors that prolong the lifespan of cannula since our desire is to maintain the patency of PIVC until the completion of treatment. Accordingly, 42 PIVCs were removed without complication, which is due to the completion of treatment.

11. Any physical contact or active movement by the infant can traumatize the vein and cause dislodgement of the cannula, this may lead to untimely removal.
Reviewer 2 comment

1. The design of study is weak because the design is a prospective cohort study. Moreover, the English of the manuscript is poor. However, if appropriately revised, it might be appropriate to be accepted.

2. Background:

line 37, line 11/12/ and line 59 needs a reference. Some are old references such as references 1 and 4, I suggest finding a more recent reference. The background presents no conflict between previous studies, no gap in the existing knowledge, no unanswered question. The authors did not perform a good review on the previous studies.

3. Methods:

Please explain more about systematic random sampling. The structure of instruments and the scoring systems are unclear. The validity and reliability of the tree instruments should be explained exactly. The duration of follow up is unclear.

4. Discussion

Discussions are weak because no appropriate interpretations are presented.

Study limitations, data implications, suggestions for further studies are not presented.

All references below 2005 must be updated with newer ones.

Response for reviewer 2 comment

1. I have agreed and the study design is prospective cohort.

2. The background is modified according to your comment. But the major challenge is the presence of limited recent literatures related to this topic.

3. Major comments on systematic sampling, validity and reliability, duration of follow up are explained as commented.

4. Your comments on discussion are incorporated accordingly.