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Evidence and Context.

Knowledge translation for newborn health in low-income settings

ACADEMIC DISSERTATION
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ABSTRACT

Background: Neonatal mortality (death within the first 28 days of life), presently accounts for 41% of the global burden of under-5 deaths. Estimates indicate that about two-thirds of the 3.1 million neonatal deaths could be averted with an increased implementation of existing evidence-based practices. Neonatal hypothermia, defined as body temperature <36.5°C, contributes to the burden of neonatal mortality and can easily be avoided and managed by practicing delayed bathing and by applying skin-to-skin care of the newborn. However, neonatal care routines in many low-income countries do not yet adhere to these evidence-based practices. In addition, misconceptions - such as beliefs that skin-to-skin care enhances vertical HIV transmission and that early bathing is required continue to exist. These misconceptions further delay knowledge translation. The Promoting Action on Research Implementation in Health Services (PARIHS) framework is a conceptual framework that posits three interacting cornerstones: (1) Evidence, (2) Facilitation and (3) Context, that, taken together, influence implementation of new knowledge. Improved understanding of how contextual factors in healthcare organizations influence knowledge translation has led to the development of context assessment tools for high-income settings. There are no tools available for this purpose in low- and middle-income settings.

Aims: To increase the body of knowledge on thermal response in newborns and mothers to inform evidence-based clinical practices, explore perceptions around these practices amongst newly delivered mothers and, furthermore, to explore the perceived influence and relevance of factors in the organizational context on the implementation of evidence-based practices in low- and middle-income settings.

Methods: The studies employed both quantitative (I, III, V) and qualitative (II, IV-V) methods. Studies I-III were undertaken in Uganda and focused on generating evidence around thermal control of the newborn. Neonatal rectal and tympanic temperatures were measured at 5, 60, 70 and 90 minutes postpartum amongst 249 mother-newborns pairs. All newborns were subjected to skin-to-skin care. The pairs were randomized to either bathing in lukewarm water at 60 minutes (n=126) or into continuous skin-to-skin care (n=123) throughout the study period (I). In order to explore perceptions of skin-to-skin care, 30 purposively sampled women having participated in Study I were invited to participate in focus group discussions (II). In order to deepen the understanding of how skin-to-skin care affects the maternal temperature, maternal breast and axillary temperatures were assessed at fixed intervals postpartum whilst practising skin-to-skin care of the newborns (III). Studies IV-V focused on generating a better understanding of factors in the organizational context that influence the implementation of new knowledge. Focus group discussions and individual interviews were undertaken amongst health workers and managers in Uganda (IV) and content validity of available tools and developed items were assessed quantitatively and qualitatively amongst identified experts in Bangladesh, Vietnam, Uganda and Nicaragua (V). Descriptive statistics, chi-square test and logistic (I) and linear (III) regression analysis methods were applied to model the relationship between the dependent variable, temperature, and the explanatory variables. Content analysis was applied to the qualitative studies (II, IV-V). Rated content validity of context concepts were assessed by calculating content-validity index (CVI) (V).

Results: The effect of bathing resulted in a significant increase in point-prevalence of hypothermia at 70 minutes postpartum amongst newborns having been exposed to bathing compared to those who were not ($p=<0.001$). This difference amongst the two groups was sustained throughout the study period. Cultural beliefs and lack of knowledge were found to influence women's perceptions of skin-to-skin care (II). In study III, a rapid maternal thermal skin response was detected following the application of skin-to-skin care ($p=<0.0001$). In addition to the sub-elements of the context cornerstone in the PARIHS framework (leadership, culture and evaluation) we found that resources, commitment, informal systems and payment as well as community involvement were important aspects of context influencing knowledge translation low- and middle-income settings (IV-V). In study V, we found that all the assessed concepts were perceived as relevant and a total of 28/94 tested items were also rated as relevant (Item-CVI >0.78).

Conclusions: Continuous skin-to-skin care reduces the prevalence of hypothermia but its application does not prevent the negative thermal effect of early bathing. There are misconceptions about thermal care of the newborn and there is a need to clarify how patient preferences are to be perceived as evidence in the PARIHS framework. In the studied healthcare settings, resources, community engagement and informal payment and commitment are relevant aspects of context, in addition to leadership, culture and evaluation, as suggested in the PARIHS framework. There is a need to adapt the PARIHS framework and tools to assess context and commitment to fit low- and middle-income settings.

Keywords: *Neonatal hypothermia, newborn, knowledge translation, Uganda, PARIHS, context*

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