BRIEF COMMUNICATIONS

Development of culturally appropriate pictorial cards to facilitate maternal health histories in rural Ghana

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Overall, 99% of annual global maternal deaths occur in low-resource countries. Delays in identifying danger signs during pregnancy and in deciding appropriate actions contribute to this mortality trend [1]. Limited health education among community health workers (CHWs) and the high illiteracy rates prevalent in rural settings make recognition of pregnancy complications and subsequent referral decisions challenging. Home-based maternal health records and pictorial cards illustrating pregnancy complications have decreased the time associated with identifying at-risk cases, increased the diagnosis and referral of at-risk pregnant women [2], promoted self-care, and educated women in low-resource settings [2–4]. However, pregnant women and providers have encountered problems interpreting and relating to the illustrations [4].

The aim of the present study was to develop and evaluate culturally appropriate and easy-to-understand pictorial cards of common pregnancy complications. Institutional review boards at the University of Michigan and Ghana Health Service approved the study, and participants provided informed consent.

The original set of pictorial cards illustrating 16 pregnancy complications (Fig. 1) was evaluated using a 10-point Likert scale during interviews with pregnant women (n = 18) in the Sene and Kumasi Metropolitan Districts of Ghana. Participants scored their agreement with each illustration's ability to convey the intended complication, and commented on the cultural appropriateness. Based on feedback from participants and input from clinicians, midwives/nurses, and CHWs, 13 of the illustrations were revised and then all of the illustrations were re-evaluated within the same communities (n = 45). The scores were analyzed using SPSS version 20 (IBM, Armonk, NY, USA) and tested for significance ($P < 0.05$), applying independent-samples t test.

Ten of the revised illustrations were found to be significantly improved. The revisions ranged from minimal to extensive; the most commonly requested change was a facial expression that communicated pain. An example of cultural appropriateness is that participants actually associated fever with a thermometer placed in the armpit, whereas the original illustration of fever showed a thermometer placed under the tongue. Two revised images (fainting and difficulty breathing), which were difficult to illustrate because of the physical movements associated with the complications, showed lower scores but the decrease was statistically insignificant.

The study largely relied on input from a small sample of pregnant women from 2 rural regions in Ghana. The inclusion of additional end-users and ethnic groups would probably improve the acceptance of pregnancy complication representations.

Pictorial cards could potentially be used by community health workers to elicit information during a health history interview, facilitate recognition of pregnancy complications, and improve referral communications between primary and referral healthcare centers [4]. The present study reinforces the importance of involving end-users throughout the development of a diagnostic aid that has major cultural implications.

Conflict of interest

The authors have no conflicts of interest.

References

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Complication	Original illustrations (*n*=18) Mean ± SD	Revised illustrations (*n*=45) Mean ± SD Significance
Fever	6.8 ± 1.9	9.7 ± 0.88 $t(61) = -5.93$, $p<0.001$
Anemia	5.3 ± 1.8	9.7 ± 1. $t(61) = -9.7$, $p<0.001$
Pain while urinating	6.3 ± 1.5	9.4 ± 0.89 $t(61) = -8.28$, $p<0.001$

Fig. 1. Original and revised illustrations for fever, anemia, and pain while urinating. The other pregnancy complication illustrations evaluated (but not shown) were lower abdominal pain, fainting, shoulder pain, bleeding, vomiting, seizing, nausea, constipation, blurred vision, leg swelling, headache, difficulty breathing, and back pain. The mean scores for the original and revised versions of the illustrations were 7.3 ± 1.6 and 8.7 ± 1.4, respectively. The minimum change in score was 0.2 (9.6 to 9.8) for the symptom of vomiting, and the maximum change in score was 4.4 (5.3 to 9.7) for the symptom of anemia. Three illustrations—bleeding, vomiting, and headache—were not revised because they scored 9.5, 9.6, and 9.3, respectively, during the first evaluation.