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Breastfeeding in Disasters: A Reminder for Policymakers

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ABSTRACT

Introduction: Considering the unexpected events that may occur in disasters, breastfeeding and risks of the artificial feeding need more investigations in such severe conditions. To review the literature regarding the status of breastfeeding practices during and after disasters, we conducted a narrative review to investigate and support breastfeeding in austere conditions of disasters. Furthermore, the consequences of depriving infants from breast milk were reviewed.

Methods: Electronic databases of PubMed, Scopus, and Science Direct were explored and English articles published in 2000-2014 over breastfeeding in disasters were extracted and reviewed.

Results: According to the findings, despite the frequent emphasizes on breastfeeding, natural and manmade disasters are strong contributors to its disruption. This study reiterates that uncontrolled distribution of the artificial milks might encourage nursing mothers to stop breastfeeding and should be avoided. Artificially-fed infants are more prone to diarrheal diseases and malnutrition, particularly in disaster situations, which safe water may not be accessible for preparing the artificial milk.

Conclusion: Healthcare workers should encourage mothers to continue breastfeeding in austere conditions of disasters and strictly monitor distribution of the formula.

Keywords: Disasters; Breast feeding; Health; Lactates

Introduction

Considering risks of the artificial feeding for mothers and their infants, breastfeeding has been supported in emergencies (1). Exclusive breastfeeding in the first six months of the birth and continuing it as a supplement thereafter are not only important for the infants' health and growth, but also crucial for health in the adulthood (2). The functions of breastfeeding not only are hydration and nutrition, but also is a good protection against infection and disease. It is comfort, warmth, and security as well" (3). On the other hand, feeding infants with the breast-milk substitutes is associated with increased prevalence of diarrhea in infants, (2, 4) higher death rates (1), sudden infant death syndrome (5), higher risk of obesity, (6) a number of chronic diseases, other risk factors in adulthood (7), and lower Intelligence Quotient (8). Breast milk does not depend on the supplies that may not be accessible during disasters (9).

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To evaluate breastfeeding practices, measurable indicators are required. Indicators provided by WHO to evaluate breastfeeding and infant feeding include the proportion of children aged less than 24 months who were put to breast within one hour of birth and the proportion of children less than 24 months of age who were ever breastfed (10). To understand the situation of breastfeeding practices during and after disasters, we conducted a narrative review to elaborate on breastfeeding and consequences of depriving infants from breast milk.

Materials and Methods

A literature review was conducted using the electronic databases of PubMed, Scopus, and Science Direct. The articles published in 2000 to 2014 were selected using the "disaster" OR "emergency" AND "breastfeeding" OR "feeding, breast" OR "breastfeeding, exclusive" OR "exclusive breastfeeding" terms. English papers which have focused on the breastfeeding in natural or man-made emergencies and the consequences of consuming breast milk substitutes were reviewed

Results

The titles and abstracts of 79 articles were reviewed. The duplicates and non-relevant papers were excluded and a total of 16 full-text papers addressing disaster and breastfeeding were investigated. Natural disasters including earthquake, Tsunami, and flood were the most three prevalent disasters comparing to the manmade disasters, which were included complex emergencies and technological disasters, as the two main disasters. East and South East Asian countries were the most commonly affected regions. The findings were classified based on the following ideas: patterns of infants feeding in disasters and consequences of consuming breast milk substitutes.

Prevalence of different infants feeding patterns in disasters

Both natural and manmade disasters were the underlying causes of breastfeeding disruptions in the affected area. However, most reviewed papers focused on natural disasters. After the tsunami in Sri Lanka, 94% of under 6 months infants were breastfed, of whom 43% were fed four or more times a day (11). However, other researchers reported no such a satisfactory numbers. After the tsunami that affected villages of the Pondicherry India, 30% of mothers did not exclusively breastfeed their infants of younger than six months, 58% bottle fed, and 51% fed their infants with commercial milk. In terms of starting breastfeeding, half of the mothers breastfed their children within one hour after delivery and 69% continued to breastfeed for more than a year. The three main supplements for breast milk were commercial formula milk (51%), rice (38%), and cow's milk (11%). One important finding was that the feeding pattern before and after the tsunami did not change and commercial formula usage after the tsunami did not increase (4). One month after the Jogjakarta Indonesia earthquake, UNICEF conducted a survey to assess nutritional status of the children and distribution of the emergency supplies. The results were different from the findings reported by Pondicherry. The findings showed that the rate of consuming formula milk increased significantly from 32% before the disaster to 43% around the time of survey ($P < 0.001$). Reception of donated commodities was associated with more tendencies to feed infants with breast milk supplements (2). This is an embarrassing side of uncontrolled distribution of breast milk substitutes. Researchers of a study in two hospitals after hurricane Katrina concluded that disasters could negatively affect health behaviors such as breastfeeding; experiencing the severe storm was associated with less tendency of mothers for breastfeeding (12).

Study which conducted in Deyang city of Sichuan province after an earthquake in 2008 showed that 27 of 31 (87.1%) postpartum mothers began breastfeeding. However, 25.9% began breastfeeding within 24 hours after the delivery and no child received exclusive breastfeeding. Six (22.2%) out of 27 breastfeeding women combined breastfeeding and bottle-feeding (13). After the Wenchuan earthquake in 2008, 76.6% of mothers chose the pure breastfeeding for their new born babies. Nevertheless, 9.4% of mothers had the pure breastfeeding for only one month and 55.9% continued to breastfeeding for six months (14).

These findings are not well-matched with the recommendations that suggest initiating breastfeed immediately after birth and recommend exclusive breastfeeding for the next six months (15). Another study conducted two years after the Wenchuan earthquake concluded that 12.3% of children were breastfed within the first hour after birth and 90.9% of children were breastfed (16).

One promising example of effective interventions to promote breastfeeding in disasters was observed after 2010 Haiti earthquake. Even before the disaster, Port-au-Prince, the capital city, had the lowest rate of exclusive breastfeeding (21.7%) in the country. An initiative called Baby Tent was established in the areas affected by the earthquake. The tents were responsible for providing a safe place for mothers to breastfeed and for non-breastfeed infants to receive infant formula milk. Not only the rate of exclusive breastfeeding rose dramatically to 70% for infants younger than six months, but also 10% of the mothers who used both breast and bottle feeding turned into exclusive breastfeeding method (8).

Stopping breastfeeding practices is not limited to natural disasters. In complex emergencies, breastfeeding practices could also be undermined. Four linked cross-sectional studies showed that 20% of infants were not breastfed at all during the Bosnian conflict. Displaced infants were deprived from breastfeeding to a larger extent. Displaced Muslims had a more severe condition in terms of breastfeeding; 59% of infants were never breastfed. Duration of breastfeeding was also affected in Bosnian conflict. The duration of breastfeeding was lower in infants whose fathers were in the war and in families who did not receive remittances. The average duration of exclusive breastfeeding was 3.3 month. Results also showed that those children were more likely to be malnourished. Exclusive breastfeeding for six months was observed only in eight percent of the infants (17). Breastfeeding practices of displaced mothers in camps are shaped by a combination of gender-based, sociocultural, economic, and geopolitical factors (18). Despite the high emphasis on the breastfeeding, disasters are strong contributors for disruption this vital action. Considering these findings, encouraging mothers to continue breastfeeding their children is an important role of primary health care staffs in disaster situations (19).

Consequences of consuming breast milk substitutes

During the disasters and emergencies, mothers tend to stop breastfeeding and initiate bottle feeding, which is a predisposing factor for infant mortality and morbidity (17). Therefore, disaster managers should be concerned about infants' feeding. Artificially fed infants are more prone to diarrheal diseases
and malnutrition (20). Consumption of breast milk substitutes can increase the risk of infectious diseases and other illnesses in children. Consequently, these infants are more prone to hospitalization and death during their first year of life (15). The results reported by Hipgrave et al. showed that during the emergencies, babies fed with breast milk substitutes had a higher rate of diarrheal diseases (21). Following disasters, even those infants who were previously fed by breast milk substitutes are more prone to its serious consequences. For instance, after 2004 Tsunami in Sri Lanka, safe water was not accessible and the environmental health was in poor condition; hence, providing breast milk substitutes for infants was accompanied with challenges (11).

The results of a study conducted to investigate feeding problems of children in four villages of Pondicherry after tsunami showed that children fed with breast milk substitutes were three times more susceptible to diarrheal diseases than those who were breastfed. Even babies, who were bottle fed during the pre-impact of tsunami, were at a higher risk during the disastrous situation (4). After the Jogjakarta Earthquake in 2006, nearly one quarter of the infants who received donated formula got diarrhea while just one fifth of those who did not receive such feeding got sick. Generally, after this earthquake, a strong relationship was observed between consumption of breast milk substitutes and diarrheal diseases. Researchers believed that children’s health in affected areas was severely

affected by donated breast milk supplement and artificial formula milk (2). The results of Anderson et al.'s study indicated that never or less than four months breastfed infants were more susceptible to be malnourished (17). Eidelman mentioned that the risk of mortality and morbidity from infectious diseases was higher in infants who did not receive breast milk (22).

During 2011 nuclear power plant disaster in Japan, potential radiation exposure was the important issue for mothers, who were breastfeeding their babies. However, expert believed that breastfeeding was safer than using artificial formula milk prepared with contaminated water. Thus, continuing breastfeeding was the most important measure that a lactating woman could take. Other experts suggested that even a lactating woman has recently weaned her baby, she should "relactate" the baby in emergencies. They believed that "mothers should continue to breastfeed unless they received a life-threatening dose of radiation" (3). "Operational Guidance for Emergency Relief Staff and Program Managers" concluded that feeding babies by anything other than breast milk jeopardizes the babies' health; therefore, consumption of breast milk substitutes should be avoided. In addition, this guidance expresses that after any disaster, media should take some action to discourage sending infant artificial formula milks, because they are not needed and unhelpful (23).

Conclusion

Reviewing the articles published in 2000 to 2014 showed that disasters had adverse effects on breastfeeding practices. The health authorities need to consider activities to promote breastfeeding in health planning in the affected regions. Health care workers should reassure mothers to continue breastfeeding and pay attention to survivor's concerns on the safety of breast milk. The most frequent health consequences of breast milk supplements in disasters are diarrhea, infectious diseases, and malnutrition, which can lead to hospitalization and mortality. Regarding the observed drawbacks and adverse consequences of breast milk supplements in disasters, the following issues should be considered:

1- Encouraging mothers to continue exclusive breastfeeding during the first six months after childbearing and thereafter as a supplementary feeding, especially in disaster situations.
2- Strict monitoring of distribution of breast milk supplements in emergencies.
3- Encouraging the media to ask donators not to send breast milk supplements for survivors.

We should remember that breastfeeding is the safest mode of infant feeding, which is undermined by consumption of breast milk supplements; therefore, these supplements should be avoided particularly after disasters.

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Conflict of interests

The authors declare no conflict of interests.

Authors' contribution

MH, MKH and MD designed the study and conducted the literature review. MH, MKH and VGH wrote the draft and reviewed the paper. All authors read and approved the final manuscript.

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