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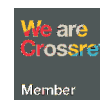
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Construction of mother's knowledge regarding bottle feeding in neonatal regurgitation incidents

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ABSTRACT

Regurgitation or Spitting Up is a normal thing that happens to babies, especially after breastfeeding. Regurgitation in small amounts, which is sometimes accompanied by burping, is usually nothing to worry about. However, if spitting up happens very often and in large amounts, it could be caused by giving too much milk. To overcome this, use a harder nipple and a smaller hole if the baby drinks milk from a bottle. In addition, get used to burping the baby more often during and after breastfeeding, both for babies who drink breast milk and formula milk. study aims to analyze the relationship between Pregnant Women's Knowledge Regarding Bottle Feeding on Neonatal Regurgitation Incidents at Seko Barat Health Center, North Luwu Regency. The research design used Cross Sectional Study. The subjects of the study were mothers who had babies aged 0-3 months with a total of 30 samples. The data collection technique used a questionnaire then the data was analyzed using the chi square test. The results of the study were obtained from the analysis test using the Chi Square Test method indicating a significant relationship between Pregnant Women's Knowledge Regarding Bottle Feeding and the Incident of Neonatal Regurgitation at the Seko Barat Health Center, North Luwu Regency in 2024. workers can improve the quality of health services by regularly providing information and counseling to mothers of toddlers about bottle feeding and how to burp babies. This effort is expected to increase knowledge and improve maternal behavior so that babies do not experience regurgitation.

Keywords:

Knowledge
Bottle feeding
Regurgitation

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Introduction

Regurgitation in infants is often experienced by newborns up to the first few months of age. Bottle feeding has become a common choice for many parents in meeting their infants' nutritional needs, whether breast milk or formula, especially in situations where direct breastfeeding from the mother is not possible (Meek et al., 2022), so research on increasing maternal knowledge about bottle feeding is very urgent because the use of bottle feeding can have a significant impact on dental health, growth, and development of children. In this regard, the proportion of babies under six months who are exclusively breastfed worldwide reached 44% in 2022. In 2023, the percentage of babies in Indonesia who received exclusive breastfeeding for the first six months reached 73.97% (Lawrence & Lawrence, 2021), According to the report on the coverage of exclusive breastfeeding at the Makassar City Health Office, it was 72.43%, In North Luwu, especially in Seko District, the percentage of exclusive breastfeeding only reached 17.0% in 2022 (Walker, 2021). This study is one

of the efforts to increase the knowledge and understanding of mothers, identify factors that influence breastfeeding, develop effective interventions, find solutions to problems related to breastfeeding, so that it can improve the quality of life of mothers and children (Parker et al., 2021).

Neonatal regurgitation, commonly known as spitting up, is a frequent occurrence among infants, often perceived as a benign condition. However, the frequency and severity of regurgitation can raise concerns regarding the infant's health and well-being, particularly in regions where healthcare access is limited or medical knowledge among parents is insufficient (Stewart, 2025). In North Luwu District, specifically at the Seko Barat Health Center, the incidence of neonatal regurgitation has been a growing concern, with a notable gap in understanding the relationship between feeding practices, particularly bottle feeding, and its potential impact on the frequency and severity of regurgitation incidents (Aizlewood et al., 2023). This research aims to explore the construction of maternal knowledge regarding bottle feeding and its potential effects on neonatal regurgitation (Aizlewood et al., 2023).

Maternal knowledge plays a crucial role in infant health outcomes, as mothers are often the primary caregivers and decision-makers in early childhood health and feeding practices (Tessema et al., 2025). Despite the widespread use of bottle feeding in many communities, there exists a significant variation in how mothers understand the potential risks and benefits of this feeding method. In rural or less developed areas, like North Luwu, factors such as limited healthcare education, cultural practices, and socioeconomic constraints can influence a mother's approach to infant feeding, leading to a lack of awareness regarding the proper techniques or the potential consequences of improper bottle feeding (Love et al., 2020). This lack of knowledge could contribute to an increased risk of neonatal regurgitation, which in turn might lead to feeding difficulties, malnutrition, or more severe gastrointestinal issues in infants (Concha & Jovchelovitch, 2021).

Research indicates that neonatal regurgitation is often related to factors such as feeding volume, positioning during feeding, the type of bottle and nipple used, and the frequency of burping during or after feeding (BaniHani et al., 2021). However, the role of maternal knowledge in these aspects has not been extensively explored in many rural areas, including the Seko Barat region. Understanding how mothers perceive and approach bottle feeding practices is critical, as it could offer insights into potential intervention strategies aimed at improving maternal education and, consequently, infant health outcomes (Indrio et al., 2022).

This study is significant for several reasons. First, it addresses the specific health issue of neonatal regurgitation in a geographically and culturally unique setting, namely the Seko Barat Health Center in North Luwu. Second, it highlights the essential link between maternal knowledge and infant health, particularly in relation to feeding practices, which are often overlooked in many public health campaigns (Organization, 2020). By exploring the construction of mothers' knowledge on bottle feeding, the study seeks to uncover existing gaps in awareness and identify areas where targeted educational interventions could make a meaningful difference. The findings from this research will have implications not only for health policies and practices at the Seko Barat Health Center but also for broader maternal and child health initiatives in rural or underserved areas in Indonesia and beyond (Renita, 2022).

The primary objective of this research is to assess the depth and breadth of maternal knowledge regarding bottle feeding and its role in neonatal regurgitation incidents (Qadriya & Safira, 2025). This study will also explore how this knowledge is constructed, shaped by various cultural, social, and educational factors. By identifying the gaps in maternal knowledge, this research aims to contribute to the development of better educational strategies tailored to the specific needs of mothers in this region (Guspianto & Ibnu, 2020).

In relation to existing literature, several studies have documented the importance of maternal education on feeding practices and its subsequent effect on infant health (Niko, 2025). However, there remains a research gap in the context of rural Indonesian communities where access to formal health education may be limited (Utami, 2024). The novelty of this study lies in its focus on this underserved population and its attempt to integrate the unique social, economic, and cultural

factors influencing maternal decision-making in the context of neonatal regurgitation (Saraswati, 2021).

Methods

In this study, a quantitative research method was used with the type The research used is analytical observational research that aims to explain whether there is a relationship between independent variables and dependent variables (Mohajan, 2020). The research design uses cross sectional, namely the measurement of independent variables and dependent variables is carried out simultaneously . Cross Sectional Design is a study to study the dynamics of the correlation between risk factors and effects, by means of an approach, observation or data collection at once at one time (point time approach) (Duckett, 2021).

Results and Discussion

This study was conducted in the Seko Barat area, North Luwu Regency, South Sulawesi. Respondents from the number of 30 people (Hayati & Dewi, 2020). The diagram below presents an analysis of the relationship between maternal knowledge about bottled milk and the incidence of regurgitation in infants aged 0-3 months at the Seko Barat Health Center, North Luwu Regency (Umar et al., 2020). In the group of respondents who had good knowledge about bottled milk, 4 respondents (25%) had babies experiencing regurgitation and 12 respondents (75%) had babies not experiencing regurgitation (Samintang et al., 2023). Meanwhile, in the group of respondents who had less knowledge about bottled milk, 9 respondents (64.3%) had babies experiencing regurgitation and 5 respondents (35.7%) had babies not experiencing regurgitation (Sabar & Sumang, 2022).

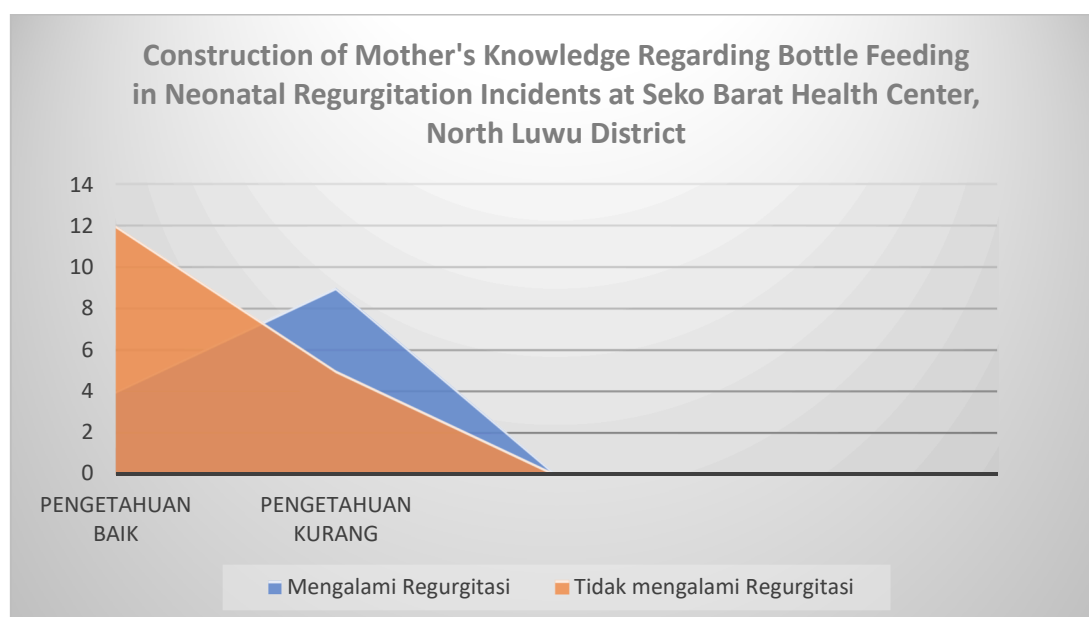


Figure 1 The Analysis Test using Chi Square

The results of the analysis test using chi square obtained a p value of 0.030 which is smaller than the value of 0.05 ($P \text{ value} < 0.05$) (Murry et al., 2020) which means that H_0 is rejected and H_a is accepted or there is a relationship between knowledge about bottled milk and the incidence of regurgitation in infants aged 0-3 months at the Seko Barat Health Center, North Luwu Regency (Hadika et al., 2021).

The research findings showed that the group of respondents who had good knowledge of bottle feeding, 25% of their babies experienced regurgitation and 75% of their babies did not experience regurgitation (Ramli et al., 2024). Meanwhile, in the group of respondents who had poor knowledge,

64.3% of their babies experienced regurgitation and 35.7% of their babies did not experience regurgitation (Bahtiar et al., 2020). The results of the analysis test with *chi square* obtained a p value of $0.030 < 0.05$) and it was concluded that there was a relationship between knowledge of bottle feeding and the incidence of regurgitation in infants aged 0-3 months at the Seko Barat Health Center, North Luwu Regency (Burhanuddin et al., 2022).

This study shows a correlation between maternal experience and the incidence of spit-up in infants. Mothers whose babies rarely spit up tend to have had children before, so they are more experienced in implementing proper parenting practices, such as proper breastfeeding techniques and burping the baby after feeding (Aeni, 2022). In contrast, mothers who have just had a baby tend to have difficulty in doing so, which leads to a high incidence of spit-up in their babies (Isnain et al., 2024).

It is important to pay attention to the use of pacifiers and milk bottles in babies. The habit of drinking milk through a pacifier can cause incorrect breastfeeding techniques and cause spit up (La Ode et al., 2022). In addition, unsterile pacifiers can be a nest for germs and increase the risk of infection in babies, such as ear infections, mouth infections, diarrhea, and respiratory infections (Domenici & Vierucci, 2022).

In line with the findings of (Pavlinac et al., 2024) Spearman's rho test results obtained a p-Value of 0.001, meaning that there is a relationship between giving milk and the incidence of regurgitation in neonates. Research also revealed that there is a relationship between giving formula milk and the incidence of regurgitation in infants aged 1-6 months in Sukorejo Village, Bangsalsari District, Jember. It is hoped that mothers will provide exclusive breastfeeding and not give formula milk to infants aged 1-6 months because at that age the baby's digestive system is not yet perfect (Odom et al., 2025).

Good knowledge about bottle feeding tends to have babies with a lower risk of regurgitation compared to mothers with less knowledge (Genna, 2022). However, it does not mean that knowledge of formula milk directly causes or prevents regurgitation (Sultana et al., 2021). There are still many other factors that can influence it, one of which is premature babies where babies fail to swallow, because the muscles connecting the mouth and esophagus are not yet mature (Mayerl et al., 2023).

According to the assumption of researchers, regurgitation is a common thing that happens to babies and is often not dangerous (Genna, 2022). However, by increasing knowledge and understanding, we can help mothers feel more confident and able to handle regurgitation in their babies properly (Shandley et al., 2021).

Conclusion

The conclusion of this study is that most mothers have good knowledge about formula milk and most mothers have less knowledge about formula milk, most babies do not experience regurgitation and some experience regurgitation, and there is a correlation between knowledge about formula milk and the incidence of regurgitation with a p value of 0.030 smaller than the value. Recommendations for improvement for existing cases are choosing formula milk that is appropriate for the age and needs of the baby (if the baby is not exclusively breastfed), preparing milk in a safe way, and positioning the baby correctly when breastfeeding using a nipple/bottle.

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