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Care management for sick toddlers through integrated management of childhood illness approach

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ABSTRACT

Efforts to promote child health aim to reduce the mortality rate of newborns, infants, and toddlers. One way to decrease the mortality rate among children under five is by enhancing the skills of healthcare workers in providing care through the Integrated Management of Childhood Illness approach. Implementing this approach effectively and on a wider scale can be cost-effective and significantly contribute to reducing the death rate among neonates, infants, and children under five. The aim of this study is to provide care management for sick toddlers through integrated management of childhood illness approach. This study is a case study that employs a descriptive observational method to examine the application of the Integrated Management of Childhood Illness approach. The subject of the case study is a 4-year 8-month old toddler. The study took place at PMB Siti Nuraeni in September 2023. Data was collected directly (primary data) using the Varney management approach and documented using the SOAP format (subjective data assessment, objective data assessment, data analysis, and case management). The collected data was then analyzed using descriptive analysis. The study concludes that data analysis is conducted by assessing subjective and objective data of a 4-year-8-month-old toddler, who has a cough but no pneumonia. The care for subject, is provided in line with the Integrated Management of Childhood Illness approach. The study recommends that midwives should be able to observe and detect early signs of danger that may occur during the growth and development of toddlers.

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INTRODUCTION

The Indonesian Government is committed to improving the quality and competitiveness of its human resources through three pillars of development: basic services and social protection, productivity, and character development. These pillars aim to create healthy, intelligent, adaptive, innovative, skilled, and characterful human resources. Health development plays a central role in achieving this goal by increasing awareness, willpower, and the ability to live a healthy life for everyone, thus serving as an investment for socially and economically productive human

resources. This emphasis on health is fundamental to improving the overall quality of human resources, particularly in terms of human capital development (BPPSDM, 2020).

The human capital index consists of the following parameters: 1) Survival: This is measured by the probability of surviving to age 5. 2) Education: This is measured by the expected number of years of schooling and harmonized test scores. 3) Health: This is measured by the survival rate of individuals aged 15-60 years and the proportion of children under 5 years of age who do not experience stunting (Direktorat Jenderal Kefarmasian Dan Alat Kesehatan, 2020). Various strategies have been implemented by the Indonesian government to increase the human capital index every year, including fulfilling nutrition and reducing stunting, improving basic and primary health services, revitalizing the transformation of community health centers, developing domestic production of pharmaceuticals and health equipment, as well as developing and utilizing technology, digitalization. and biotechnology in the health sector, increasing the competency of health workers, and strengthening the national health insurance system. The results of implementing the various strategies that have been carried out are shown in Indonesia's achievement of the human capital index in 2021, namely 0.54 points, and is ranked 6th in the ASEAN region (Kemenko PMK, 2022).

In implementing the 2020-2024 health development plan, the Ministry of Health has identified 5 Strategic Goals, which are further divided into 8 Strategic Targets. One of the eight Strategic Goals is to enhance the health of mothers, children, and community nutrition (Kementerian Kesehatan Republik Indonesia, 2021). The primary challenge in achieving the health development plan is overcoming obstacles in accessing healthcare services. These obstacles can take the form of economic, geographic, epidemiological, or cultural barriers. Such challenges can affect community participation in the health sector, including the regularity of weighing toddlers (ensuring that children under five years old are weighed at least 8 times in the last 12 months) (Kementerian Kesehatan, 2020). The Regulation of the Minister of Health of the Republic of Indonesia Number 25 of 2014 regarding Child Health Efforts emphasizes that every child is entitled to survival, growth, development, and protection from violence and discrimination. Therefore, child health efforts should be carried out in an integrated, comprehensive, and sustainable manner. These efforts are aimed at children from the time they are in the womb until they reach 18 years of age. One of the primary objectives of child health efforts is to ensure the survival of children by reducing the mortality rate of newborns, infants, and toddlers (Kementerian Kesehatan Republik Indonesia, 2021). The effectiveness of government regulations is evident in the reduction of the Infant Mortality Rate (IMR) from 24 deaths per 1,000 live births to 16.85 deaths per 1,000 live births. Additionally, the prevalence of stunting has decreased from 24.4% in 2021 to 21.6% in 2022. There has also been a general increase in service coverage for children under five, including complete basic immunization coverage of 86.4%, screening of 99,263 newborns for congenital hypothyroidism (SHK), monitoring of growth and development for 95.75% of children, and 96.60% of babies receiving health services (Direktorat Gizi dan Kesehatan Ibu dan Anak, 2023).

Each day, numerous caregivers take millions of children with potentially life-threatening illnesses to seek medical attention. In regions with high child mortality rates, a select number of conditions account for the majority of these medical visits. Globally, over 80% of deaths among children under the age of five are attributed to neonatal conditions and infectious diseases such as pneumonia, diarrhea, malaria, measles, and meningitis, often exacerbated by malnutrition. The implementation of effective interventions, feasible even in resource-constrained settings, has the potential to prevent the majority of childhood deaths (WHO, 2024).

According to the data reported to the Directorate of Family Health in 2020, out of the 28,158 deaths of children under the age of five, 72.0% (20,266 deaths) occurred during the neonatal period. Specifically, of the reported neonatal deaths, 72.0% (20,266 deaths) occurred at the age of 0-28 days. Additionally, 19.1% (5,386 deaths) occurred at the age of 29 days to 11 months, and 9.9%

(2,506 deaths) took place at the age of 12-59 months (Kementerian Kesehatan Republik Indonesia, 2021).

In 2020, the leading cause of neonatal death was low birth weight (LBW). Other causes of death included asphyxia, infection, congenital abnormalities, neonatal tetanus, and others. Infectious diseases were a significant contributor to death in children aged 29 days to 11 months. Similar to the previous year, pneumonia and diarrhea remained the main problems, causing 73.9% of deaths due to pneumonia and 14.5% of deaths due to diarrhea. Other causes of death in this age group included congenital heart defects, other congenital disorders, meningitis, dengue fever, neurological diseases, and others. In children under five (12 to 59 months), diarrhea was the most common cause of death. Other causes of death in this age group included pneumonia, congenital heart defects, traffic accidents, drowning, parasitic infections, and others (Kementerian Kesehatan Republik Indonesia, 2021).

One way to decrease the infant mortality rate is by enhancing the capabilities of health workers at community health centers using the Integrated Management of Childhood Illness (IMCI). Integrated Management of Childhood Illnesses (IMCI) was the strategy created by the World Health Organization (WHO) and UNICEF in 1992. The IMCI protocol, a comprehensive approach, centers on the health of children aged 5 and under. It aims to lower mortality, sickness, and impairment, while enhancing the growth and progress of children under five (Belete et al., 2024). This approach consists of three main components: organizational, clinical, and communitarian (García Sierra & Ocampo Cañas, 2020). This method has been in development in Indonesia since 1997. Despite being around for 20 years, its practical implementation still faces challenge (Direktorat Jenderal Kesehatan Masyarakat, 2020).

IMCI is an approach that prioritizes the overall health of the child, rather than focusing on a specific illness or condition. It addresses a combination of ailments that require integrated treatment both at home and in primary health care facilities (Pinto et al., 2023). The use of Integrated Management of Childhood Illness (IMCI) approach for providing services to sick toddlers is considered cost-effective. It can significantly contribute to reducing the mortality rate of neonates, infants, and children under five when implemented correctly and widely. Therefore, it is essential for health workers with the authority to serve sick toddlers to be competent in carrying out IMCI according to standards and applying the approach broadly to all (Direktorat Jenderal Kesehatan Masyarakat, 2020).

IMCI activities aim to reduce illness and death while improving the quality of health services for children under five in basic health outpatient units. When implemented effectively, this initiative anticipates and addresses diseases that often cause the deaths of babies and toddlers. It's considered comprehensive because it includes counseling, prevention, treatment, improved nutrition, and immunization efforts. The guidelines for implementing IMCI are outlined in Minister of Health Regulation Number 25 of 2014 concerning Child Health Efforts, which states that IMCI is carried out by trained nurses and midwives. In relation to the IMCI program, midwives play several important roles, including delivering IMCI services and providing education through consultations and health awareness regarding the management of sick toddlers. This includes recognizing signs and symptoms of disease, addressing dehydration, nutritional counseling, and advising on when mothers should bring their toddlers for check-ups at a midwife or other health facility (Kementerian Kesehatan RI, 2014). Based on the description above, the aim of this research is to provide care management for sick toddlers through integrated management of childhood illness approach.

RESEARCH METHOD

This study is based on a case study design that uses interpretive descriptive methodological approach. The participant of the case study is toddler, who is 4 years and 8 months old. The study took place at PMB Siti Nuraeni in September 2023. Data was collected by conducting interviews

and observations and data was categorized into four main categories, namely: subjective data assessment, objective data assessment, data analysis, and care management. The collected data was then analyzed using descriptive analysis.

RESULTS AND DISCUSSIONS

Services Activity

Over the care was conducted using the Varney management of care approach, which involved 4 phase namely subjective data assessment, objective data assessment, data analysis, and implementation of care. In the initial phase of this case study, the first step involved conducting a subjective data assesment. Based on the subjective data, it was noted that toddler, who is 4 years 8 month old, was brought by his parents to PMB for a health check. According to subjective data assessment, the client has had a cough for 3 days without fever and shortness of breath. The toddler current medical history does not indicate any serious illness, but the family is anxious. Prenatal and perinatal history reveals that the toddler was born after a gestation period of 39 weeks, through spontaneous labor that lasted 10 hours and was assisted by a doctor. There were no birth complications, and the toddler's birth weight was 3480 grams with a length of 51 cm, has no allergies and has completed basic immunizations. Furthermore, the toddler's past medical history does not include any serious illnesses.

The second phase involved conducting an objective data assessment. The assessment of objective data as the second step of management of care involved observing the toddler's physical condition from head to toe. The vital signs measured were as follows: consciousness was composmentis, temperature was 36.5°C, pulse rate was 70 beats per minute, breathing rate was 28 breaths per minute, and oxygen saturation was 98%. The results of the nutritional status examination revealed the toddler's height as 95 cm, head circumference as 49 cm, weight as 15.5 kg, and upper arm circumference as 16 cm. The physical examination of the head and neck showed normal results, as did the chest examination, which indicated normal shape and size, normal movement, symmetrical breasts, vesicular breathing, faint heart sounds, and no abnormal sounds. Additionally, the abdomen, anus, genitalia, spine, and extremities showed no abnormalities.

In the third phase, the process entails performing data analysis by assessing both subjective and objective data. Data analysis was conducted on subjective and objective assessments of a 4-year-old, 8-month-old toddler with a non-pneumonia cough.

The final step in this case study is to carry out care management. The implementation of care in this case involves carrying out actions based on data analysis and toddler needs. In this case, the management includes providing an explanation to the mother that the results of the child's physical examination are within normal limits and that the child's main complaint of cough does not require referral treatment. The mother understands the explanation given and is aware of the examination results. Additionally, counseling is provided to relieve coughs and soothe the throat with safe ingredients, such as sweet soy sauce or honey mixed with lime juice. The mother understands and intends to follow the advice. The time for the repeat visit is scheduled for 5 days from now. The mother understands and agrees to the schedule. Finally, it is important to document the results of the examination.

Based on the explanation provided, it is evident that the management of care in this case study consists of 4 phases include subjective data assessment, objective data assessment, data analysis, and implementation of management of care approach. Management of care is carried out by following the Integrated Management of Sick Toddlers (IMCI) flow.

In the subjective data assessment, it was found that the client was 4 years 8 months old with the main complaint of cough without shortness of breath or fever for the last 3 days. According to the IMCI Chart Book (2022), to identify the cause of the cough, it is important to confirm the duration of the cough when a child presents with a main complaint of coughing or difficulty breathing. According to the 2016 World Health Organization (WHO), cough symptoms

in toddlers are a common response to most physiological causes of acute respiratory infections, with an incidence rate of 25% (Maharani et al., 2024). The 2018 report from the Indonesian Ministry of Health indicated that 20.06% of toddlers experience symptoms of coughing (Kementrian Kesehatan RI, 2019)

The next step is to conduct an objective data examination by performing a general assessment, which includes observing vital signs and conducting a physical examination focusing on the main complaint. This involves the LOOK, LISTEN, and CHECK steps, which include counting breaths in 1 minute, checking for inward movement of the chest wall, observing and listening for wheezing, and using a pulse oximeter to assess the child's oxygen saturation level while they are calm. The objective data assessment has been conducted in accordance with the principles outlined in the MTBS Chart Book, 2022. The results of the objective data examination indicate that the toddler's vital signs are within normal ranges. The pulse rate is 88 times per minute, respiration rate is 28 times per minute, body temperature is 36.5°C, and oximetry level is 98%. These values align with the established norms for children aged 3-5 years. According to the John Hopkins Medicine guidelines, the pulse rate for this age group is between 80 - 120 beats per minute, respiratory frequency is 22-34 breaths per minute, and body temperature should be around 36.4 degrees Celsius (John Hopkins, 2023). Additionally, the observation of the toddler's breathing using the LOOK, LISTEN, and CHECK method found a breathing frequency of 28 times per minute, without chest wall pulling or wheezing, and with an oximetry reading of 98%. These results indicate that the child is not experiencing any difficulty in breathing. Breathing rate of 15-40 breaths per minute, accompanied by inward pulling of the chest wall, and symptoms such as nodding when breathing and bluish lips, indicates a child with shortness of breath (Jasin, 2017). Rapid breathing may suggest that an individual is experiencing difficulty with respiration or is not receiving sufficient oxygen (Standford, 2024).

Data analysis was conducted based on subjective and objective data studies. The analysis revealed that a 4-year-old and 8-month-old toddler had a non-pneumonia cough. This classification is based on the IMCI guidelines and the IMCI Chart Book, 2022. Coughing and difficulty breathing, which are key factors in the IMCI program's classification of cough in toddlers. Based on this classification, toddlers with coughing and no rapid breathing are classified as having a non-pneumonic cough, those with coughing and rapid breathing are classified as having pneumonia, and those with coughing, rapid breathing, and chest wall pulling are classified as having severe pneumonia (Kementerian Kesehatan RI, 2022)**.** In this study breathing rate was 28 breaths per minute, and oxygen saturation was 98%, acording to Halimah, (2019) for children aged 2-59 months, a respiratory frequency of less than 50 times per minute for ages 2-11 months and less than 40 times per minute for ages 12-59 months, without chest wall pulling, indicates a non-pneumonic cough. A cough is a widespread medical concern and results in approximately 30 million doctor visits each year. A cough represents an inherent, primal reflex that serves as an integral component of the body's immune response, providing protection against exogenous materials (Sharma et al., 2023). The primary purpose of coughing is to use high-velocity airflow to clear the air passages. Cough airflow is produced by contracting expiratory muscles while the glottis is closed, resulting in the generation of high positive subglottic pressures (Lee et al., 2021). The classification of a cough is primarily based on the duration of the symptom. A cough lasting fewer than three weeks is classified as acute, while a cough lasting between three and eight weeks is categorized as subacute. A cough lasting more than eight weeks is classified as chronic (Sharma et al., 2023). Various environmental and host factors, such as respiratory infection, air pollutants, occupational irritants, allergens, eosinophils, or reflux, may sensitize and trigger cough. These factors represent potential risk factors for chronic cough (Chung et al., 2022). Coughing is frequently experienced by children. The primary reason for coughing is a respiratory tract infection, such as a cold. Typically, young children have six to 12 respiratory tract infections per year, generally due to viruses (The Royal Children's Hospital, 2022). Cough is a prevalent

occurrence during childhood, leading to a substantial number of medical consultations and exerting a significant impact on the well-being of children, families, and society. It is generally a symptom of various medical conditions and is most commonly associated with acute respiratory infections. These infections can result in children experiencing 5–8 coughing episodes per year, with each episode lasting 7–9 days. In over 90% of instances, this form of acute cough in children resolves within three weeks following the initial infection (Jurca et al., 2017).

The care management in this study was conducted based on the analysis results mentioned earlier for toddler, who is 4 years and 8 months old and was diagnosed with a non-pneumonia cough. The management involved informing the mother about the examination results, advising on how to administer throat lozenges using soy sauce and lime, and scheduling a follow-up visit. To evaluate the impact of the intervention, the patient had a follow-up visit after 5 days, revealing a significant reduction in the toddler's cough symtomps. The etiology and management of cough in toodler patients markedly differ from those in adults, thus rendering the conventional approach used in adult patients unsuitable for application in the toodler population (Chang et al., 2006). Most coughs don't require treatment, antibiotics are not effective for most coughs and are usually unnecessary. There is no solid evidence that cough medicines are beneficial, and they could potentially be harmful for children younger than six years old (The Royal Children's Hospital, 2022). Research on the neurophysiological mechanisms underlying the cough reflex has made substantial progress. However, there remains uncertainty regarding the most effective treatments for pediatric cough in children and adolescents, resulting in unmet needs in this area. The widespread use of self-prescribed cough remedies indicates a significant demand for such treatments, but their safety and efficacy for pediatric populations are inadequately supported by evidence. Furthermore, considering that most coughs are linked to minor, self-resolving illnesses, it may not be necessary to treat every patient (Manti et al., 2020).

According to IDAI (2017), cough management should be tailored to the underlying condition. Various medications can be used to treat the cough, and home remedies may also be recommended. Home remedies are simple measures of symptom management for minor health complaints (Parisius et al., 2014). The management aligns with the IMCI guidelines and the IMCI Chart Book (2022) for toddlers with non-pneumonia cough. The treatment includes providing safe throat lozenges and cough suppressants, addressing wheezing if present, and referring the toddler for further evaluation if the cough persists beyond specific durations or if wheezing recurs. The recommended home remedy for throat lozenges is a herbal concoction made of lime juice with soy sauce or honey (Kementerian Kesehatan RI, 2022).

Honey, lemon, thyme, and herbal teas are often considered effective in relieving common symptoms of cough (Sebo et al., 2023). A combination of lime juice and honey has been found to inhibit the growth of Staphylococcus aureus (Fitriana et al., 2022). Lime juice has been found to hinder the growth of bacteria and molds, such as Escherichia coli, Streptococcus haemolyticus, Staphylococcus aureus, Aspergillus niger, and Candida albicans. Lime has also been observed to slow down the growth of bacteria that cause coughs, for instance, Staphylococcus aureus and Streptococcus pyogenes. This effect remains even when lime is mixed with honey or sweet soy sauce. The antibacterial activity of a blend of lime and honey stays effective at temperatures up to 100°C. It is also reported that honey possesses antibacterial properties. Fresh honeybee has shown to inhibit up to 50% against Staphylococcus aureus, Pseudomonas aeruginosa, and Escherichia coli. Honey also possesses antibiotic properties that promote the healing of necrotic tissues, wounds, and ulcers (Hardoko et al., 2020).

The extensive research conducted in the previous century has proven that honey produces sufficient H_2O_2, which exhibits notable antibacterial properties. The levels of H_2O_2 present in honey vary widely based on its dilution, botanical and geographical origin, as well as its production and storage conditions (Yupanqui Mieles et al., 2022). It is becoming more evident that administering a single serving of honey may lead to a decrease in mucus production and alleviate cough symptoms

in children. Honey exhibited favorable demulcent properties and displayed antioxidant effects. Recommend a single dose of 2.5 mL of honey before bedtime for children over 1 year old who have a cough. Furthermore, it was observed to increase cytokine release, which could potentially confer antimicrobial benefits (Goldman, 2014). In line with IDAI recommendations from 2017, honey can be given to children over 1 year old with cough complaints and may be more effective than giving nothing, a placebo, or diphenhydramine (IDAI, 2017).

CONCLUSION

The assessment of subjective data for a 4-year-8-month-old toddler, at PMB Siti Nuraeni was conducted smoothly and in line with theoretical expectations. Based on the analysis of subjective and objective data, it was determined that toddler as a subject in this research, also 4 years 8 months old, had a cough but not pneumonia. The care and management provided for toodler followed the Integrated Management of Childhood Illness approach, advising on how to administer throat lozenges using soy sauce, honey and lime. To evaluate the impact of the intervention, the toddler had a follow-up visit after 5 days, revealing a significant reduction in the toddler's cough symtomps.

Based on the research results, it is crucial to provide continuous high-quality services tailored to patient needs to prevent potential complications. This includes offering home remedies for children with coughs following IMCI instructions. Midwives are expected to be able to observe and detect early signs of danger that may arise during the growth and development stages of toddlers through the Integrated Management of Childhood Illness approach. The research findings suggest that a combination of soy sauce, lime, and honey is effective in treating non-pneumonic coughs in toddlers. These findings are well-supported by strong evidence from previous research. Therefore, this research can serve as a valuable reference for developing policies for managing non-pneumonic coughs in toddlers based on home remedies. The research has limitations due to the potential for bias, as the researcher's personal thoughts and preferences may impact the findings.

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