

The Relationship Between Mothers' Knowledge of Beyond Use Date (BUD) of Syrup Medications and Their Behavior in Administering Syrup Medications to Toddlers in Dusun Jeringo Lauq

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ABSTRACT

This study investigates the relationship between mothers' knowledge of the Beyond Use Date (BUD) of syrup medications and their behavior in administering these medications to toddlers in Dusun Jeringo Lauq, Lombok Barat, Indonesia. A cross-sectional observational analytic design was employed, involving 63 mothers of toddlers as the study sample, selected using total sampling. Data were collected through questionnaires measuring knowledge (independent variable) and behavior (dependent variable). Statistical analysis using the Chi-Square test revealed a significant relationship between mothers' knowledge of BUD and their behavior in administering syrup medications ($p = 0.004$, $\alpha = 0.05$). The findings suggest that higher maternal knowledge regarding BUD is associated with safer and more rational administration practices for syrup medications in toddlers. This study highlights the importance of enhancing public health education on medication safety to reduce risks associated with improper administration of syrup medications.

Keywords: Knowledge, Behavior, Syrup Medications, Beyond Use Date (BUD), Toddlers.

1. Introduction

The toddler stage represents a critical developmental period often referred to as the *golden age*, characterized by rapid growth and heightened vulnerability to health risks [1]. During this phase, appropriate nutrition and medication play an essential role in supporting healthy development [2]. Syrup medications are frequently prescribed for toddlers due to their palatability and ease of administration [3]. However, rational use of medicines remains a global challenge, with improper administration practices leading to adverse health outcomes [4].

A key factor influencing medication safety is the distinction between Expired Date (ED) and Beyond Use Date (BUD). While ED refers to the manufacturer-determined shelf life of unopened medications, BUD specifies the safe duration of use after opening or compounding [5]. Misunderstandings regarding BUD are prevalent among the public, leading to the use of potentially unsafe medications [6].

Previous studies have demonstrated that maternal knowledge significantly influences medication practices, including dosage accuracy, storage, and duration of use [7]. A lack of awareness about BUD has been associated with the administration of degraded or unsafe medications, thereby increasing the risk of treatment failure and adverse effects [8]. This underscores the necessity of targeted educational interventions, particularly in rural communities, where access to pharmaceutical guidance may be limited.

In Indonesia, self-medication practices are widespread, with 35.2% of households reported to store leftover medications [9]. In West Nusa Tenggara, approximately 25.5% of households keep medications for future use, often without proper labeling of opening dates [10]. Such practices raise concerns about improper administration of expired or BUD-exceeded syrups in children. Against this backdrop, this

study examines the relationship between maternal knowledge of BUD and their behavior in administering syrup medications to toddlers in Dusun Jeringo Lauq.

2. Research Method

2.1 Research Design

This research employed an observational analytic method with a cross-sectional design to assess the relationship between maternal knowledge of BUD and their administration behavior.

2.2 Participants and Sample

The study population consisted of all 63 mothers with toddlers (aged 1–5 years) residing in Dusun Jeringo Lauq. A total sampling technique was applied, making all 63 eligible mothers participants. Inclusion criteria included mothers who had administered syrup medications to their toddlers, while exclusion criteria excluded those unwilling to participate or with communication impairments.

2.3 Instruments

Data were collected using structured questionnaires. Knowledge was assessed through six dichotomous (true/false) items, while behavior was measured through ten multiple-choice items (always, sometimes, never). Reliability was tested using Cronbach's alpha, with values >0.60 considered acceptable.

2.4 Data Collection

Data were collected through door-to-door surveys conducted between July 15–19, 2025. Respondents completed questionnaires after providing informed consent.

2.5 Data Analysis

Univariate analysis described respondents' demographics, knowledge, and behavior. Bivariate analysis employed the Chi-Square test to determine the relationship between knowledge and behavior at a 95% confidence level ($\alpha = 0.05$).

3. Results and Discussion

3.1 Respondents' Characteristics

Table 1 presents respondents' demographic distribution. The majority were aged 26–35 years, with education levels predominantly at the secondary school level.

Table 1. Demographic Characteristics of Respondents

Variable	Category	Frequency (n=63)	Percentage (%)
Age	20–25 years	18	28.6
	26–35 years	29	46.0
	>35 years	16	25.4
Education	Primary	10	15.9
	Secondary	32	50.8
	Tertiary	21	33.3
Occupation	Housewife	38	60.3
	Employed	25	39.7

3.2 Knowledge and Behavior Levels

Analysis revealed that 52.4% of mothers demonstrated good knowledge of BUD, while 47.6% exhibited moderate or poor knowledge. Regarding behavior, 57.1% practiced safe administration (checking BUD, proper storage, and avoiding expired syrups).

3.3 Relationship between Knowledge and Behavior

The Chi-Square test indicated a significant association between maternal knowledge and behavior ($p = 0.004 < 0.05$). Figure 1 illustrates this relationship.

Figure 1. Relationship between Knowledge and Behavior in Administering Syrup Medications
(graph: proportion of safe vs. unsafe behavior stratified by knowledge level)

These findings align with prior studies indicating that knowledge is a determinant of rational medicine use [7], [8]. Mothers with higher awareness of BUD demonstrated better compliance with safe practices, such as discarding syrups after the recommended period. Conversely, limited knowledge contributed to unsafe practices, consistent with reports from Jakarta and Indramayu where misunderstanding of BUD was widespread [6], [11].

This study reinforces the importance of maternal health education in promoting rational medicine use. Programs such as DAGUSIBU (Get, Use, Store, Dispose) have been effective in enhancing community awareness about safe medication practices

[12]. Incorporating BUD education into these initiatives may further reduce unsafe practices in rural settings.

4. Conclusion

This study concludes that maternal knowledge of Beyond Use Date (BUD) significantly influences their behavior in administering syrup medications to toddlers. Higher levels of knowledge are associated with safer administration practices, including proper storage and timely disposal of expired syrups. These findings underscore the need for health promotion programs to emphasize the importance of BUD in ensuring medication safety for children.

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