



(RESEARCH ARTICLE)



## Factors influencing compliance with multiple injection immunization among mothers of toddlers at The Public Health Center Porong Integrated Health Service Post, Sidoarjo, East Java, Indonesia: A Descriptive Study

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### Abstract

**Introduction:** Immunization significantly reduces infant and child morbidity and mortality rates globally. However, basic immunization coverage in 65 countries must catch up to the 90% global target. Multiple injection immunization involves administering multiple immunizations in one visit, enhancing early protection during vulnerable periods. This approach reduces the need for multiple health visits, which is particularly beneficial for children facing access barriers. It also improves healthcare efficiency, minimizes missed opportunities, and lessens the burden on parents needing frequent facility visits.

**Objective:** The objective of this study was to explore the factors influencing compliance with multiple injection immunization among mothers of toddlers at the Public Health Center Porong Integrated Health Service Post, Sidoarjo, East Java, Indonesia

**Method:** Conducted in March 2024 at Public Health Centre Porong, Indonesia, this study employed a consecutive sampling method. It involved 100 mothers with infants aged 13 to 24 months who had received immunizations at the Post. Data were collected through structured interviews and analyzed to determine compliance rates and associated factors.

**Result:** Among the participants, 91% of mothers were aged between 20 to 35 years, indicating a productive age group. The compliance rate for multiple injection immunization was 61%. Additionally, 74% of mothers had completed high school, suggesting a positive association between higher education and enhanced health decision-making capabilities. A significant proportion of mothers (75%) were not employed, highlighting the influence of occupation on health-related knowledge and practices.

**Conclusion:** The study underscores the necessity for targeted health education initiatives tailored to the diverse demographic and occupational characteristics of mothers. Such interventions should improve maternal knowledge and promote adherence to essential childhood immunizations, leveraging the cognitive advantages associated with higher education and non-working status. This approach aims to foster informed decision-making and proactive health behaviours among mothers in community health settings.

**Keywords:** Multiple injection immunization; Compliance; Health service; Mothers of toddlers

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## 1. Introduction

Immunization is a highly effective health intervention in reducing infant and child morbidity and mortality rates. Based on data from the Indonesian Health Profile, in 2020, the percentage of primary immunization was 83.3%. Then, there was a slight increase in 2021, amounting to 84.2%. In 2022, the achievement of primary immunization will decrease by 76.5% (1). However, the data shows that primary immunization has yet to reach the strategic plan target of 93.6%. (2). Multiple injection immunization is the administration of more than one type of immunization injection in one visit, which aims to protect children earlier during vulnerable times, there will be fewer immunization visits, so it will be easier for children who have difficulty or limited access to health services, parents do not need to come to health facilities repeatedly, increasing efficiency for health care providers, and avoiding missed opportunities (3). Although multiple injections are not new to parents, they remain essential for health workers to engage effectively with parents to enhance their willingness to comply with multiple injection immunizations (4). Factors contributing to low coverage of multiple injections include facilitators (knowledge, attitudes, education), supporters (distance to health facilities), and reinforcement (support from spouses and healthcare providers) towards comprehensive immunization coverage for infants by mothers (5). According to Gustina Lisa, et al. 2020, the completion immunization status is 52 (66.7%), and the respondent who had a primary education level 42 (53.8%), with good knowledge category of 42 (53.8%) (Astuti *et al.*, 2023). East Java Health Profile data shows that the IDL achievement 2022 is 91.58%. This achievement is still based on the IDL target of 95%. (6). For Sidoarjo district achievement data, it was found that the achievement of Complete Basic Immunization in 2020 was 100.60%. Moreover, in 2021, Sidoarjo Regency's Complete Basic Immunization achievement will decrease to 99.24%. (Sidoarjo Regency Health Profile, 2021). Data on the achievement of Complete Basic Immunization at the Porong Public Health Center in 2021 is 38.61% of the target of 95% and is the lowest achievement in the Sidoarjo Regency area. Based on these things, this research was created to explore a toddler mother's multiple injection immunization compliance profile at the Public Health Center Porong Integrated Health Service Post, Sidoarjo, East Java, Indonesia.

## 2. Material and methods

The research method used is a descriptive survey research method. The research was conducted in March 2024 at Integrated Health Service Post Public Health Center Porong. The sampling method used was consecutive sampling, resulting in a total sample size of 100 participants from 3 villages and three urban wards within the Public Health Center Porong Integrated Health Service Post, Sidoarjo. The target population consisted of mothers with infants aged 13 to 24 months. The survey was conducted using questionnaires. Ethical clearance for this research was obtained from the Health Department ethics committee under approval number 508/UN3.FK/DL.11/2024. The collected data is presented in the form of a frequency distribution.

## 3. Results and discussion

**Table 1** Characteristics of Toddler Pneumonia at Soewandhie Regional Hospital

No	Respondent Characteristic	Criteria	Frequency (f)	Percentage (%)
1	Mother's age (years old)	20-35	91	91
		>35	9	9
		Total	100	100
2	Mother's Education	Elementary School	5	5
		Junior High School	11	11
		Senior High School	74	74
		University	10	10
		Total	100	100
3	Mother's Job	Not working	75	75
		Private sector	15	15
		Entrepreneur	10	10
		Total	100	100

In the frequency distribution table of respondent characteristics, were 100 respondents sampled, detailed as follows. Most mothers were aged 20-35 years, accounting for 91%. This indicates that most participating mothers were in their productive age range. Regarding maternal education, a significant majority had completed high school, outnumbering those who completed primary school, junior high school, or tertiary education/academy, totalling 74%. Additionally, from the distribution table, it was observed that a majority of mothers, 75%, were not employed.

**Table 2** Frequency Distribution of Mothers of Toddlers' Compliance with Giving Multiple injection immunization for babies at the Public Health Center Porong Integrated Health Service Post, Sidoarjo

Information	Criteria	Frequency (f)	Percentage (%)
Compliance	Yes	61	61
	No	39	39
	Total	100	100

The frequency distribution of mothers' compliance with multiple injection immunization above (table 5.4) shows that 61 (61%) mothers were obedient in taking their babies to the Integrated Health Service Post for multiple injection immunization. Take your child to the Integrated Health Service Post to be given multiple injection immunization.

### 3.1. Overview of Factors Influencing Compliance With Multiple Injection Immunization Among Mothers Of Toddlers

The respondents who participated in this research came from mothers with babies aged 13 - 24 months who had been immunized at the Public Health Center Porong Integrated Health Service Post, Sidoarjo, totalling 100 people. Based on research results, the majority of mothers' ages are in the 20-35 year age range, 91%. This age is productive. This is in accordance with research conducted by Pangesti (2012), which states that the productive age is the age that plays the most role, has intense activity, and has good cognitive abilities. So, this age influences the level of knowledge (7). Another research conducted by Firmansyah (2014), using 92 respondents taken in disaster-prone areas, found that respondents aged 20-45 had the best knowledge about disaster mitigation (8). This is also in line with Indiantoro (2009), who states that age is the calculated age of an individual from birth to several years. The older you are, the more mature a person will be in thinking and working (9). This also affects a person's cognitive abilities. Then, in terms of public trust, someone who is more mature will be more trusted than someone who is not mature enough. A person's age also influences a person's ability to comprehend and think patterns. As individuals age, their cognitive development progresses, enhancing understanding and thought processes and improving knowledge acquisition. Those aged 20-35 years actively engage in societal and social activities, preparing extensively for successful aging while dedicating significant time to reading. Intellectual abilities, problem-solving and verbal abilities are reported to have almost no decline at this age (10).

Most of the respondents' education, 74%, were high school graduates. According to Carter (2011), the higher a person's level of education, the easier it is to receive information, so the more experience they have. Someone who has extensive experience will have an impact on their cognitive abilities. Education is an increasingly important factor in everyday life. The level of education will influence a person's perception of cognitive abilities. Someone who is highly educated also has high reasoning skills (11). According to Eberhardt et al. (2007), research was conducted on 74 respondents with different educational backgrounds and related to their level of knowledge. The result is that those with a higher education level have a broader level of knowledge and more experience (12).

According to Notoadmodjo (2014), higher education facilitates a more accessible reception of new information and adaptation to unfamiliar situations (13). This is consistent with findings by Siagian and Herlina (2018), who suggest that education motivates individuals to seek knowledge, acquire experiences, and organize them into knowledge. Individuals with higher education are more receptive to new ideas than those with lower education levels. The educational level of mothers significantly influences their practice of breastfeeding. Higher maternal education correlates with better maternal knowledge, influencing mothers to provide optimal infant care. Lower education levels may delay the adoption of new knowledge and hinder basic decision-making abilities, particularly concerning compliance with multiple injection immunization protocols. Education generally encompasses planned efforts to influence individuals and groups positively (14).

Furthermore, regarding the characteristics of mothers' occupations, it was discovered that most mothers, totalling 75 individuals (75%), were not employed. Research conducted by Pangesti (2012) explains that a person's work will

influence a person's knowledge and experience. Work affects a person when the work uses the brain more often than the muscles. The performance and ability of a person's brain to store (memory) increases or increases when it is frequently used; this is directly proportional to when a person's work uses more brain than muscle. Another supporting explanation is that a person's brain or cognitive abilities will increase when they are often used for activities and doing things like puzzles or reasoning. The reality that exists for the employment variable for this research is that most mothers do not work. When examining the quantity of respondents, there is an equal representation between their education level and employment status. This establishes a statistical correlation, indicating that occupation significantly impacts knowledge levels (7). Research indicates that non-working mothers tend to exhibit higher compliance rates in selecting injectable contraception. Additionally, studies have established a correlation between pregnant women's employment status and their adherence to antenatal care (ANC). Furthermore, it is noted that non-working women have greater opportunities for social interaction and information exchange but require a solid knowledge foundation. Within communities of non-working mothers, there is a documented improvement in attitudes and behaviors related to administering basic immunizations compared to their working counterparts, attributed to their increased availability for accompanying their children to immunization appointments(15,16,17)

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#### 4. Conclusion

Several key insights have emerged based on the findings of this study involving 100 mothers with infants aged 13-24 months who participated in immunization at the Public Health Center Porong Integrated Health Service Post, Sidoarjo. Most mothers fell within the productive age range of 20-35 years, comprising 91% of the respondents. This demographic is characterized by high cognitive abilities and active engagement in community and social activities, which positively influences knowledge acquisition and health behaviours, including immunization compliance. Education also plays a significant role, with 74% of respondents having completed high school, indicating a correlation between higher educational attainment and better cognitive capabilities, which enhances decision-making regarding child health, including adherence to multiple injection immunizations. Furthermore, the predominant non-working status among mothers (75%) underscores the impact of occupation on health-related knowledge and practices, highlighting how occupations requiring cognitive engagement contribute to better health outcomes through enhanced decision-making abilities and engagement in health-promoting behaviours.

These findings underscore the importance of targeted health education interventions tailored to the needs and characteristics of mothers in different demographic and occupational contexts. Such interventions aim to enhance maternal knowledge and adherence to essential childhood immunizations. Such interventions leverage the cognitive advantages of higher education and non-working status, promoting informed decision-making and proactive health behaviours among mothers in community health settings.

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#### Compliance with ethical standards

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##### *Disclosure of conflict of interest*

There was no conflict of interest.

##### *Statement of ethical approval*

Ethical clearance was approved by the Ethics Committee of the Soewandhie Regional Hospital, Surabaya, East Java, Indonesia Number 024/KE/KEPK/ 2023, on September 26, 2023.

##### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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