

PARENTAL COMPLIANCE WITH ROUTINE CHILDHOOD IMMUNIZATION AMONG CHILDREN 0-24 MONTHS

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Abstract

Immunization is an essential strategy to protect children from vaccine-preventable diseases. In Indonesia, achieving complete immunization coverage remains a challenge at the primary health care level, including in Tegal Regency, where immunization coverage requires continuous evaluation to ensure all children receive timely vaccination. The success of immunization programs depends not only on the availability of health services but also on parental compliance in bringing children for immunization according to the recommended schedule. This study aimed to describe the level of parental compliance in bringing children aged 0–24 months for timely basic immunization in the working area of Suradadi Primary Health Center. A quantitative study with a descriptive survey design was conducted among parents of children aged 24–36 months. A total of 22 respondents were selected using consecutive sampling based on predefined inclusion criteria. Data were collected through observations of maternal and child health (MCH) books and children's immunization records and analyzed descriptively using frequency distributions and percentages. The findings showed that most respondents were of productive age, had completed secondary education, and were housewives. Overall, 20 respondents (90.9%) were compliant with the recommended immunization schedule, while 2 respondents (9.1%) were non-compliant. The high level of compliance indicates that most parents appropriately utilized immunization services according to the schedule. Strengthening health education, optimizing the role of community health volunteers, and implementing reminder systems are needed to maintain and improve parental compliance and ensure equitable immunization coverage among children.

Keyword: *Children aged 0–24 months, Immunization, Parental compliance, Primary health care.*

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1. Introduction

Routine childhood immunization is widely recognized as one of the most cost-effective public health interventions

for preventing infectious diseases and reducing childhood morbidity and mortality. During the first 24 months of life, children's immune systems are still

developing, making them particularly vulnerable to vaccine-preventable diseases. Complete and timely administration of basic immunizations is therefore essential not only to protect individual children but also to establish herd immunity and sustain the effectiveness of national disease prevention and control programs ^[1].

Despite substantial progress in expanding immunization services, achieving optimal immunization coverage remains a major global health challenge. In 2024, an estimated 14 million children worldwide did not receive a single dose of any vaccine (zero-dose children), while nearly 20 million others failed to complete the recommended immunization schedule. These figures demonstrate that the availability of immunization services alone does not guarantee adequate vaccine uptake. Evidence from developing countries further indicates that only 30.9% of children aged 12–23 months received complete basic immunization. Limited access to healthcare, population mobility, and inadequate parental awareness of immunization have been identified as major barriers to vaccine uptake. These findings suggest that the success of immunization programs depends not only on service availability but also on parents' compliance with recommended immunization schedules ^[2].

Indonesia continues to face similar challenges. Although complete basic immunization has long been integrated into maternal and child health services delivered through primary healthcare facilities, the 2023 Indonesian Health Survey reported that approximately 1.3 million children had not received complete basic immunization. National coverage reached only 84.5%, remaining below the World Health Organization (WHO) target of at least 95% ^[3]. This shortfall indicates that a considerable proportion of children remain susceptible to vaccine-preventable diseases. Consequently, inadequate immunization coverage reflects not only limitations in

healthcare delivery but also suboptimal parental compliance with scheduled childhood immunization ^[4].

Incomplete immunization exposes children to an increased risk of contracting vaccine-preventable diseases, including tuberculosis, diphtheria, pertussis, tetanus, hepatitis B, poliomyelitis, and measles. Because immune function is still maturing during early childhood, failure to complete the recommended immunization schedule substantially increases the likelihood of severe infection and related complications^[1]. Moreover, low immunization coverage compromises herd immunity, thereby increasing the risk of outbreaks of vaccine-preventable diseases. Improving immunization coverage therefore requires greater attention to the factors influencing the utilization of immunization services, particularly parental compliance with recommended vaccination schedules ^[5].

The success of childhood immunization programs largely depends on parental decision-making, as parents are the primary caregivers responsible for accessing preventive healthcare services for their children. Parental compliance is influenced not only by the availability and accessibility of immunization services but also by multiple behavioral determinants. According to the PRECEDE–PROCEED model, health-related behaviors are shaped by predisposing, enabling, and reinforcing factors. In the context of childhood immunization, predisposing factors include parental knowledge, perceptions of vaccine benefits and risks, and sociodemographic characteristics; enabling factors involve access to immunization services; whereas reinforcing factors comprise support from family members, community health volunteers, and healthcare professionals. Previous studies have consistently demonstrated that these factors influence parental decisions regarding childhood immunization^[6,7]. In particular, parental characteristics, including educational attainment, have been reported to be significantly associated with compliance

with basic childhood immunization^[8]. Understanding the level of parental compliance is therefore essential for evaluating the effectiveness of immunization programs and informing strategies to improve immunization coverage.

At the regional level, complete basic immunization coverage in Central Java Province reached 93.3% in 2023, falling short of the provincial strategic target of 95%. Although Tegal Regency reported a higher coverage of 98.5%, an increase from 90.9% in the previous year, district-level estimates may obscure disparities across primary healthcare service areas. Data from the Tegal Regency Health Office revealed that the Suradadi Primary Health Center achieved a complete basic immunization coverage of 94.1%, placing it among the five primary healthcare centers with the lowest immunization coverage in the district and below the provincial target ^[9]. Although the difference from the target was relatively small (0.9%), it nevertheless indicates that a proportion of children remain inadequately protected against vaccine-preventable diseases.

Even modest declines in immunization coverage may reflect underserved populations and increase the number of children vulnerable to vaccine-preventable diseases ^[10]. Furthermore, aggregate immunization coverage does not adequately capture individual health-seeking behaviors, particularly parental compliance with the recommended immunization schedule. Therefore, this study aimed to describe the level of parental compliance with routine childhood immunization among children aged 0–24 months in the working area of the Suradadi Primary Health Center, Tegal Regency.

2. Method

This research used a descriptive cross-sectional survey approach to assess parental adherence to the recommended schedule for routine childhood immunization. The study was conducted at a community-based integrated health

post (Posyandu) within the working area of the Suradadi Primary Health Center, Tegal Regency, Indonesia. The study population comprised parents of children aged 24–36 months who were registered and attended the selected Posyandu. Children aged 24–36 months were specifically selected because, at this age, completion of the basic immunization schedule can be accurately assessed based on their documented immunization history.

The minimum sample size was calculated using the Lemeshow formula for descriptive studies ^[11]. Based on the reported complete basic immunization coverage of 94.1% in the Suradadi Primary Health Center, the minimum required sample size was 22 respondents. Participants were recruited using a consecutive sampling technique, whereby all eligible parents attending the Posyandu during the data collection period were consecutively enrolled until the required sample size was achieved^[12]. Eligible participants were parents of children aged 24–36 months who possessed a Maternal and Child Health (MCH) Handbook or other documented immunization records to verify the child's immunization history, provided informed consent, and were able to communicate effectively. Parents who could not be contacted during the study period or did not complete the data collection process were excluded from the analysis.

Data were analyzed using univariate descriptive statistics to summarize respondents' characteristics and parental compliance with the recommended childhood immunization schedule. The findings are presented as frequencies and percentages, including parental characteristics (age, educational attainment, and occupation), child characteristics (age), and the level of parental compliance with the recommended immunization schedule.

3. Results and Discussion

Timely completion of the routine childhood immunization schedule depends largely on parents, particularly

mothers, who are the primary decision-makers regarding children's preventive healthcare. Delayed or missed immunization extends the period during which children remain susceptible to vaccine-preventable diseases. Consequently, this study focused on maternal compliance to the recommended childhood immunization schedule. Previous studies have consistently shown that parental adherence is influenced by a range of sociodemographic factors, particularly maternal educational attainment and employment status [13]. Accordingly, maternal and child characteristics that may be associated with immunization adherence were examined and are presented in Table 1.

Table 1. Respondent Characteristics

Variabel	f	%
Maternal Age		
Reproductive	19	86.4
Non-reproductive	3	13.6
Child's Age		
2 years	19	86.4
3 years	3	13.6
Maternal Education		
Primary school	4	18.2
Junior high school	6	27.3
Senior high school	10	45.5
Higher education	2	9.1
Maternal Occupation		
Housewife	16	72.7
Civil servant	2	9.1
Private-sector employee	2	9.1
Self-employee	2	9.1
Maternal compliance		
Non-compliant	2	9.1
Compliant	20	90.9

Source: Primary data, 2026.

As shown in Table 1, most respondents were mothers of reproductive age (86.4%). Although previous studies have reported inconsistent findings regarding the relationship between maternal age and childhood immunization, increasing maternal age is generally associated with greater parenting experience, improved health literacy, and more informed decision-making regarding child health [14]. PSalmon et al. further demonstrated that childhood immunization coverage

increased with maternal age, peaking among mothers aged approximately 26 years, suggesting that maternal age may contribute to timely completion of childhood immunization schedules [15].

The majority of children included in this study were two years of age (86.4%). This age group was deliberately selected because routine childhood immunization is expected to be completed before 24 months of age, allowing accurate assessment of immunization completion [16]. Furthermore, the relatively short interval between immunization and data collection reduces the likelihood of recall bias. To enhance data accuracy, immunization histories were verified using the Maternal and Child Health (MCH) Handbook, Indonesia's standardized home-based health record, rather than relying solely on maternal recall [17,18].

Most mothers had completed senior high school (45.5%) and were homemakers (72.7%). This demographic profile may have facilitated adherence to the recommended immunization schedule. Higher educational attainment has consistently been associated with improved health literacy, enabling mothers to better understand the benefits, timing, and importance of childhood immunization [19]. Likewise, mothers who do not engage in full-time employment may have greater flexibility to attend Posyandu sessions or healthcare facilities according to the recommended immunization schedule, thereby reducing missed or delayed vaccinations [20].

Taken together, the demographic profile of the respondents may partly explain the high level of maternal compliance observed in this study. Most mothers were of reproductive age, had completed secondary education, and were homemakers. Collectively, these characteristics have been associated with positive health behaviors and may facilitate mothers' ability to access health information, make informed decisions, and utilize childhood immunization services appropriately [21,22]. This finding highlights the potential contribution of

favorable sociodemographic characteristics to the successful implementation of routine childhood immunization programs.

The principal finding of this study was that 90.9% of mothers were compliant with the recommended childhood immunization schedule. This high level of compliance suggests that the immunization program within the Suradadi Primary Health Center catchment area has achieved not only satisfactory service delivery but also strong community acceptance of routine childhood immunization. These findings reinforce the notion that the success of immunization programs depends not only on vaccine availability and service accessibility but also on parents' willingness to utilize available healthcare services. The high level of compliance observed in this study may be attributable to several contextual factors, including the accessibility of immunization services, the routine implementation of Posyandu activities, and the active involvement of healthcare professionals and community health volunteers in providing health education and immunization reminders. This interpretation is consistent with previous studies demonstrating that positive perceptions of immunization, family support, and the quality of healthcare services are important determinants of parental compliance with childhood immunization schedules^[23]

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4. Conclusion

Most parents in the Suradadi Primary Health Center catchment area demonstrated compliance with the recommended childhood immunization schedule, with an overall compliance rate of 90.9%. Nevertheless, a small proportion of parents remained non-compliant, indicating that high immunization coverage does not necessarily reflect universal compliance across the target population.

These findings suggest that the success of childhood immunization programs depends not only on the availability and accessibility of immunization services but also on parents' compliance with utilizing those services according to the recommended schedule. Sustained efforts are therefore needed to strengthen health education, optimize the roles of healthcare professionals and community health volunteers (Posyandu cadres), and implement effective immunization reminder systems. Such strategies may help maintain the high level of parental compliance while reaching families who remain at risk of failing to complete their children's routine immunization schedule, thereby promoting more equitable and comprehensive immunization coverage.

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6. References

1. Semmes, E. C., Chen, J. L., Goswami, R., Burt, T. D., Permar, S. R., & Fouda, G. G. (2021). Understanding Early-Life Adaptive Immunity to Guide Interventions for Pediatric Health. *Frontiers in Immunology*, 11, 595297. <https://doi.org/10.3389/FIMMU.2020.595297>
2. Gelagay, A. A., Worku, A. G., Bashah, D. T., Tebeje, N. B., Gebrie, M. H., Yeshita, H. Y., Cherkose, E. A., Ayana, B. A., Lakew, A. M., Bitew, D. A., Asmamaw, D. B., Negash, W. D., Belachew, T. B., & Fentie, E. A. (2023). Complete childhood vaccination and associated factors among children aged 12-23 months in Dabat demographic and health survey site, Ethiopia, 2022. *BMC Public Health*, 23(1). <https://doi.org/10.1186/S12889-023-15681-0>
3. Putri, F. A. P. arsyila, Yolanda, S. Y., Sugesti, R. S., Indriyani, F. I., Salsabila, H. S. P., Wisnari, I. B. W., & Hamdanis, I. N. H. (2024). Hubungan Tingkat Pengetahuan Ibu Sumber Informasi dan Dukungan Keluarga terhadap Kepatuhan Pemberian Imunisasi Dasar pada Anakdi TPMB Kecamatan Ciputat Timur Kota Tangerang Selatan tahun 2024. *Jurnal Ilmiah Bidan*, 8(2). <https://doi.org/10.69935/JIDAN.V8I2.75>
4. Afriza, N., Handayani, L., & Djannah, S. N. (2023). Analisis Kepatuhan Ibu dalam Pemberian Imunisasi Dasar Lengkap pada Anak : Literature Review: *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 6(9), 1728–1734. <https://doi.org/10.56338/MPPKI.V6I9.3664>
5. World Health Organization. (2025). *Immunization coverage*. Fact Sheet. <https://www.who.int/news-room/fact-sheets/detail/immunization-coverage>
6. Dyda, A., King, C., Dey, A., Leask, J., & Dunn, A. G. (2020). A systematic review of studies that measure parental vaccine attitudes and beliefs in childhood vaccination. *BMC Public Health* 20:1, 20(1), 1253-. <https://doi.org/10.1186/S12889-020-09327-8>
7. Innas, S., Susanti, M., Ma'arif, M., & Baiturrahmah, U. (2025). Hubungan Faktor-faktor yang Mempengaruhi Tingkat Kepatuhan Ibu terhadap Pemberian Imunisasi Dasar Pada Bayi di Puskesmas Andalas. *Nusantara Hasana Journal*, 5(3), 110–118. <https://doi.org/10.59003/NHJ.V5I3.1634>
8. Ardhana, F., Djojosingito, A., & Garina, L. A. (2025). Pengaruh Faktor Orang Tua terhadap Kepatuhan Imunisasi. *Jurnal Riset Kedokteran*, 99–108. <https://doi.org/10.29313/JRK.V5I2.8309>
9. Dinas Kesehatan Kabupaten Tegal. (2024). *Profil Kesehatan Kabupaten Tegal Tahun 2023*.
10. WHO, & UNICEF. (2025). *Global childhood vaccination coverage holds steady, yet over 14 million infants remain unvaccinated* -. https://www.who.int/news/item/15-07-2025-global-childhood-vaccination-coverage-holds-steady-yet-over-14-million-infants-remain-unvaccinated-who-unicef?utm_source=chatgpt.com
11. Lemeshow, S., Hosmer, D. W., Klar, J., & Lwanga, S. K. (1990). *Adequacy of sample size in health studies*. John Wiley & Sons.
12. Gliklich, R. E., Dreyer, N. A., & Leavy, M. B. (2014). *Registry Design*. Agency for Healthcare Research and Quality. https://www.ncbi.nlm.nih.gov/sites/books/NBK208632/?utm_source=chatgpt.com

13. Lockett, B., Willemse, J. J., & Modeste, R. M. (2025). A systematic review on factors influencing immunisation adherence among children under 12 years of age. *Health SA Gesondheid*, 30, 2864. <https://doi.org/10.4102/HSAG.V30.I0.2864>
14. Albalawi, H. M. H., & Rezq, K. A. (2024). Influences of Cultural Factors on Vaccination Practices Among Parents Prior to School Age: A Systematic Review and Meta-Analysis. *Cureus*, 16(12), e75845. <https://doi.org/10.7759/CUREUS.75845>
15. Salmon, D. A., Smith, P. J., Pan, W. K. Y., Navar, A. M., Omer, S. B., & Halsey, N. A. (2009). Disparities in preschool immunization coverage associated with maternal age. *Human Vaccines*, 5(8), 557–561. <https://doi.org/10.4161/HV.5.8.9009>
16. Hill, H. A., Yankey, D., Elam-Evans, L. D., Mu, Y., Chen, M., Stokley, S., Peacock, G., & Singleton, J. A. (2026). Vaccination Coverage by Age 24 Months Among Children Born in 2021 and 2022 — National Immunization Survey-Child, United States, 2022–2024. *Morbidity and Mortality Weekly Report*, 75(11), 146. <https://doi.org/10.15585/MMWR.MM7511A2>
17. Hu, Y., Liang, H., Chen, F., Shen, L., Pan, X., Wang, Y., Chen, Y., & Lv, H. (2021). Evaluating the vaccination coverage: validity of household-hold vaccination booklet and caregiver's recall. *Human Vaccines and Immunotherapeutics*, 17(9), 3034–3041. <https://doi.org/10.1080/21645515.2021.1906151>
18. WHO. (2017). *Strengthening implementation of home-based records for maternal, newborn and child health*.
19. Susilawati, S. (2019). Implimentasi Imunisasi untuk Mencapai Universal Child Immunization (UCI) Di Puskesmas Raya Kecamatan Siantar Barat Kota Pematangsiantar. *Jurnal Kesehatan Global*, 2(1), 8. <https://doi.org/10.33085/JKG.V2I1.4115>
20. Pengabdian Kepada Masyarakat, J., Citra, I., Tanjung, D., Pratita, W., & Martineta, M. (2024). The Importance of Using Maternal and Child Health Books to Monitor Children's Growth and Development: A Health Education Program. *Jurnal Pengabdian Kepada Masyarakat (Indonesian Journal of Community Engagement)*, 10(1), 38–42. <https://doi.org/10.22146/JPKM.89977>
21. Williams, S. V., Akande, T., & Abbas, K. (2024). Systematic review of social determinants of childhood immunisation in low- and middle-income countries and equity impact analysis of childhood vaccination coverage in Nigeria. *PLOS ONE*, 19(3), e0297326. <https://doi.org/10.1371/JOURNAL.PONE.0297326>
22. Derqui, N., Blake, I. M., Gray, E. J., Cooper, L. V., Grassly, N. C., Pons-Salort, M., & Gaythorpe, K. A. M. (2024). Timeliness of 24 childhood immunisations and evolution of vaccination delay: Analysis of data from 54 low- and middle-income countries. *PLOS Global Public Health*, 4(11), e0003749. <https://doi.org/10.1371/JOURNAL.PGPH.0003749>
23. Ruth Susanty, R., Azzahra Nasution, M., Harahap, F., Edi, S., Sipahutar, H., Biologi, J., & Negeri Medan, U. (2025). Pandangan Masyarakat terhadap Imunisasi pada Anak Usia 0-12 Bulan di Wilayah Kerja Aceh Singkil. *Jurnal Bioshell*, 14(2), 170–178. <https://doi.org/10.56013/BIO.V14I2.3995>