# Optimization of Makodam Jaya (Telegram Bot Application Management) Increases Satisfaction with Registration Services at Posyandu Klopo Sepuluh

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**ABSTRACT**
**Background:** The waiting time for registration services at Posyandu is the community's first service, the waiting time for health service registration at Posyandu according to Posyandu standards is 3-5 minutes, but this has experienced delays or increased waiting times.
**Purpose:** Analyzing the satisfaction of registration services with the Makodam Jaya (Telegram Bot Application Management) at Posyandu Klopo Sepuluh.
**Methods:** Type of experimental research: pre-post test One Group Design, sampling technique with purposive sampling, sample size of 113 mothers analyzed statistically using the Wilcoxon test.
**Results:** There are differences in the Tangible, Reliability, Responsiveness, Assurance and Empathy indicators of satisfaction of registration services between before and after the intervention was given, apart from that, based on the Wilcoxon Test analysis on satisfaction, the P value was $(0.000) < \alpha (0.05)$.
**Conclusion:** Makodam Jaya Innovation (Telegram Bot Application Management) Increases Satisfaction with Registration Services including Tangible, reliable, Responsiveness, Assurance, and Empathy indicators at Posyandu Klopo Sepuluh.

**Keywords:** posyandu, registration services, satisfaction, telegram bot, wilcoxon test

## BACKGROUND

Waiting time for registration services is an indicator of the community satisfaction index (Ministry of Health of the Republic of Indonesia, 2023a). The waiting time for registration services at Posyandu is the community's first service, as the gateway to Posyandu which plays an important role in providing the patient's first impression to the community. The existing system allows for a history of service data that is not continuous. Posyandu needs a web-based management information system to manage data efficiently. Through the system, it is hoped that it can help make it easier for medical and non-medical personnel in service activities and clinical management at Posyandu (Ministry of Health of the Republic of Indonesia, 2023b). The waiting time for health service registration at Posyandu according to Posyandu standards is 3-5 minutes, but this has experienced delays or increased waiting times, online registration has not been widely implemented by health service facilities, especially Posyandu (Ministry of Health of the Republic of Indonesia, 2023a), the queuing process and Posyandu become crowded. There is a buildup of crowds in the Posyandu area due to a buildup of patients and patient families registering manually at the same time, there is no set schedule for patients coming to receive health services. The online registration method aims to make it easier for patients to register before visiting the location directly (Tostain et al., 2024).

The city of Surabaya set a record for the lowest prevalence value in Indonesia with a figure of 4.8% according to the SSGI in 2022. Quoting from the Ministry of State Secretariat of the Republic of Indonesia, the stunting prevalence rate in Surabaya beats Denpasar with a prevalence value of 5.5% and South Jakarta with a value of 11.9%. In a period of 2 years, the Surabaya City Government succeeded in reducing the number of toddlers who were indicated to be stunted to 11,865 toddlers. In 2020 there were 12,788 toddlers who experienced stunting and at the end of 2022, it fell to 923 toddlers. At the end of 2023, the city of Surabaya succeeded in reducing the number of toddlers experiencing stunting to 279 cases. All parties involved contribute to reducing the prevalence of stunting in the city of Surabaya. Surabaya Mayor Regulation Number 79 of 2022 concerning the Acceleration of Reducing Stunting in the City of Surabaya explains the role of social institutions, as explained in article 17 paragraph. According to these regulations, one of the social institutions that plays an important role is Posyandu (Suryanto & Health, 2024).

The causes of long waiting times for registration services at Posyandu include: unclear registration flow for patients because there is no flow for patients to read or see; new patients filling in patient identification takes time; the number of officers at the information desk is insufficient. Unclear patient registration flows and lack of information has the potential to cause patient confusion (Kurniawati & Kusumawardhani, 2023). According to the theory, patient confusion can be reduced by providing a clear flow. Lack of human resources in the information department causes long and long queues. Large queues can occur if the capacity of a service system is input and the system response is slower than the input (Siwayana et al., 2020). The queue at the information section became long because it was done manually and staff served customers and handled several tasks, namely verifying registration files, providing information to Posyandu visitors who asked about the poly section, and handling complaints. The impact of queues at counters that are too long and long can cause ineffective health services (Agustina, 2020). Apart from being ineffective, long queues will make patients uncomfortable and ultimately not satisfy patients. Several studies show a relationship between waiting time for registration and patient satisfaction (Kurniawati & Kusumawardhani, 2023).

In an effort to make waiting times for registration services faster, there are many applications that are used to support the online patient registration process, including Telegram Bots, SMS gateways, more specifically Telegram Bots, and others. This application is easy to download with a smartphone and nowadays many people have it (Frandika Irawan et al., 2024). Evaluation and review of online registration have never been carried out. The implementation of online registration actually does not face many problems, but this is more due to the low level of public awareness about registering online (Muzafiqi, 2021). The registration service has moved towards digitization, carrying out online registration and consultations via Telegram Bot, but there are still obstacles, namely online registration when receiving registration and online consultation services are still late. Applications that can help with the queuing, recording, storage, and payment processes are needed that are integrated with medical record data (Setiowati et al., 2024).

Online registration allows patients to register online so they don't have to queue for too long at the hospital. The registration system uses a manual system is carried out by taking the queue number at the hospital when going for an examination or registering by ordering in advance, namely two days before the examination time (Novi Aryani Fitri & Ismaulidia Nurvembrianty, 2021). The online registration system at Posyandu. The use of the Telegram Bot application is managed by a human system, namely, there are officers or cadres who reply to messages every time an online registration is received. If a patient registers online, the system automatically responds immediately according to the request format (Tostain et al., 2024).

**METHODS**

The type of research used in this research is experimental research. The research design in this study is a pre-post-test One Group Design, this design attempts to uncover cause and effect by involving a control group in addition to the experimental group (Suhron, 2024). The variable in this research is the independent variable MAKODAM JAYA (Telegram Bot Application Management) and the dependent variable is Registration Service Satisfaction. The population in the innovation project were mothers who had children aged 0 to 5 years in the Posyandu Klopo ten working area, cooperative in the research. The sampling technique was simple random sampling. The sample size was 113 mothers. This innovation project was carried out by collecting mothers who have children aged 0 to 5 years. The instrument in this innovation project is innovation project satisfaction MAKODAM JAYA (Telegram Bot Application Management) which has indicators of Tangible, Reliability, Responsiveness, Assurance, and Empathy. Statistical analysis uses the Wilcoxon test. The research was conducted in December 2024, and an ethical feasibility test was carried out at NHM University with Number: 2405/KEPK/UNIV-NHM/EC/XI/2025.

**RESULTS**

**Table 1.** Distribution of the frequency of ibu

| Characteristics Family N (113) | Mean±SD |
| --- | --- |
| Age (M) | 45±12.2 |
| Marital status | |
|    Divorced | 11 (10) |
|    Married | 102 (90) |
| Employment | |
|    Full-time/part-time | 44 (39) |

| | |
|---|---|
| Unemployed/retired | 69 (61) |
| Education | |
| Primary | 17 (15) |
| Middle | 63 (56) |
| High | 33 (30) |
| Child status | |
| Eldest | 18 (16) |
| Middle | 31 (27) |
| Youngest | 43 (38) |
| Only | 21 (19) |
| Type of family | |
| Nuclear | 96 (85) |
| Extended | 17 (15) |

Source: primer 2025

Based on the table above, it was found that most of the characteristics of families in this study were Age Mean±SD= (45±13.2), marital status, 11 (10%) were Divorced while 102 (90%) Married, for Teenage Family Employment, 44 (39%) Full-time/part-time, 69 (61) Unemployed/ Retired, for Education with a Primary level of 17 (15%), Middle 63 (56%), High 33 (30%), for Child status 18 (16%) Eldest, Middle 31 (27), Youngest 43 (38%), Meanwhile type of family for Nuclear family 96 (85%), 17 (15%) Extended Family.

**Table 2.** Differences in satisfaction of mothers between before and after being given the Innovation MAKODAM JAYA (Telegram Bot Application Management) (N=113).

| Variable | Pre | Post | P-Value |
|---|---|---|---|
| | Mean±SD Max-Min | Mean±SD Max-Min | |
| *Tangible* | 12.67±1.082 (18-6) | 23.90±2.453 (30-21) | 0,000 |
| *Reliability* | 4.38±0.994 (6-2) | 8.22±0.809 (10-7) | 0,000 |
| *Responsiveness* | 4.28±1.042 (6-2) | 9.57±0.891 (10-6) | 0,000 |
| *Assurance* | 12.38±2.429 (15-5) | 22.67±2.323 (25-18) | 0,000 |
| Empathy | 13.24±2.397 (15-5) | 23.52±2.432 (25-17) | 0,000 |
| *Uji Wilcoxon Test P-Value* | 0,000 | | |

Source: primer 2025

Based on the results above obtained before being given MAKODAM JAYA (Telegram Bot Application Management in Service Registration), it was found that the value (mean ± SD) for the Tangible Indicator was (12.67 ± 1.082), Reliability was (4.38 ± 0.994), Responsiveness was (4.28 ± 1.042), Assurance was (12.38 ± 2.429), and Empathy was (13.24 ± 2.397), Meanwhile, after being given MAKODAM JAYA (Telegram Bot Application Management in Service Registration), the values obtained (mean ± SD) for Tangible

Indicators were (23.90 ± 2.453), Reliability was (8.22 ± 0.809), Responsiveness was (9.57 ± 0.891), Assurance was (22.67 ± 2.223), and Empathy was (23.52 ± 2.432). Based on the Wilcoxon Test analysis on all satisfaction indicators, a P value of (0.000) < α (0.05) was obtained, which shows that there is a difference in the indicators of Tangible, Reliability, Responsiveness, Assurance, and Empathy between before and after being given MAKODAM JAYA. Apart from that, based on the Wilcoxon Test analysis on satisfaction, a P value of (0.000) < α (0.05) was obtained, this shows that there is a difference in satisfaction between before and after being given MAKODAM JAYA to the mother at Posyandu Klopo Sepuluh.

## DISCUSSION

### Respondent Characteristics of Mother

Based on the results of the study, the average age is 45 years, and most of them are married and some are divorced, in accordance with the study that the positive influence of prayer at meal times on changes in life satisfaction is greater in unmarried elderly people compared to married elderly people. The findings in the study reinforce claims of the beneficial effects of religion on mental well-being in later life. Moreover, they elaborate on the resource substitution thesis by showing that religion provides greater psychological benefits for older adults who do not have alternative resources for the well-being of a marital partner (Kojima et al., 2020). The relationship between degrees of social commitment and marital status revealed that getting involved in communal activities only serves to enhance life satisfaction in married older individuals. Likewise, the moderated influence of interaction with others on living arrangements revealed that older adults who were not involved in societal participation but lived with a spouse or other household members had higher life satisfaction while taking part in communal events increased their life contentment even more. The formation of social groups and the promotion of social policies aimed at meaningful social ties are critical, particularly for older Indians who live alone or are not already married, since these will contribute to their overall life satisfaction (Nagargoje et al., 2022).

As for Teenage Family Employment, most are Unemployed/Retired, so mothers who do not work have the opportunity and freedom and satisfaction to register online with the Telegram Bot, In accordance with other studies In the association between employment demand and satisfaction, a combination between job demand along with leadership jobs had a positive and negative impact on regular and irregular employment. The moderating effect of the interaction between job stress and supervisory jobs varied depending upon employment type. Consequently, management responsibilities should alter depending on the type of job. Guaranteed autonomy and low managerial contribution improve job satisfaction regardless of employment type. Appropriate management involvement reduces job stress and promotes job happiness for regular employees; however, managerial intervention has a detrimental influence on irregular employee satisfaction. Irregular workers should be given clear job requirements from the beginning, with minimum managerial influence (Kim & Cho, 2020) Furthermore, for education, most of them are middle-level education, with secondary education mothers having sufficient knowledge and skills in understanding technology, especially in utilizing online systems such as telegram bots, which are very useful for the posyandu process. This is in accordance with other research that Health Information is very useful for them, especially in dealing with technical obstacles in using the 5-table system in the implementation of posyandu (Situmorang et al., 2024). Meanwhile, other research shows that We advocate focused health education initiatives for moms to help them understand the value of all recommended kid immunizations. Furthermore, we recommend ongoing mother satisfaction evaluations to improve and maintain the quality of immunization services (Thirunavukkarasu et al., 2023).

**Analysis of Reporting satisfaction with Registration Services after the MAKODAM JAYA innovation (Telegram Bot Management Application in Registration Services)**

Based on the research results, there was an increase in satisfaction with registration services after the MAKODAM JAYA innovation (Telegram Bot Management Application in Registration Services) at the Klopo Posyandu. These ten things are in accordance with other research that is the relationship between using the online registration system and patient satisfaction. It is intended that the findings of this study would lead to more service innovation, making patients more happy with the hospital's offerings (Saputra et al., 2020). Other research shows that chatbots can be an effective approach to enhancing community involvement, particularly among moms. In the long run, this technology is expected to boost community involvement and stimulate more active participation in various activities, particularly the deployment of Posyandu (Iskandar Mulyana et al., 2023), reinforced by other research that the Telegram application can be used to obtain information on patient registration procedures, register old patients, check queue numbers related to health services, and find out more information about data in the health center. If the patient successfully registers, the patient will receive information about the medical record number, name, gender, age, date of visit, destination clinic, and queue number. Furthermore, the patient's registration data will be automatically detected in the register menu in the Health Center Management Information System. This can certainly speed up the registration process and patients do not have to wait too long at the health center to get services according to their needs (Puspitasiwi et al., 2021).

The increase in satisfaction in Tangible indicators shows quite well, in the context of health posyandu registration services related to the physical aspects of the service, which aims to support the provision of quality health services. The tangible dimension is one of the service assessment criteria which includes several aspects such as MAKODAM JAYA (Telegram Bot Application Management in Service Registration) innovation facilities, including equipment, workforce, and communication methods with service recipients, which will ultimately influence the positive response of service recipients to the quality of the services provided (Rantung et al., 2023). This is confirmed by other research that when the tools and infrastructure or technology are in poor condition, not fast, and not good enough, when people access them directly they will feel disappointed and create a sense of dissatisfaction with the service at that time (Yunus, M., Kesuma, T. M., Diah, M., Yusuf, F., Abubakar, A., Rizal, S., & Zikran, 2023). As for the explanation of satisfaction with several indicators in other research, the research carried out identified critical healthcare system and demographic characteristics that influence service dependability, responsiveness, physical evidence, and overall service satisfaction. However, in order to provide a greater rationale for patient satisfaction with healthcare policymaking and/or change, future polls should use broader criteria and satisfaction indices that include more malnutrition. Furthermore, private facilities should be segregated from public facilities since the nature, size, and control impact satisfaction and have reasons for patients, can choose to tour both facilities. Qualitative research will investigate why patients were happy or unsatisfied with healthcare services at the facilities visited. Follow-up research with health professionals on patient satisfaction and discontent is required to help develop new policies and changes to bridge the gap between perception and real care delivery (Wu et al., 2021).

The Reliability indicator shows in providing registration services to mothers of toddlers. In its implementation, this dimension contains two main elements, namely MAKODAM JAYA's innovative ability to provide fast services as promised and the accuracy of the services provided or the extent to which nurses are able to minimize/prevent errors in

the service process provided. There are several things that institutions must do to create reliable services and be able to provide reliable services (zero defects/error-free) while also having a high awareness of the importance of reliable services. Apart from that, institutions also need to provide infrastructure such as MAKODAM JAYA innovation which supports error-free programs.  In a hospital service setting, reliable service means service that is free from errors in assessment, diagnosis, and treatment, there is no malpractice, and the service provided guarantees improvement in the condition of mothers and toddlers (Permana & Febrian, 2023).

In the Responsiveness dimension, the ability to provide services quickly, precisely/accurately and the existence of MAKODAM JAYA innovation (Telegram Bot Application Management in Service Registration) when needed because there are certain things in the registration service that they consider to be neither late nor disappointing. When serving registration with the MAKODAM JAYA innovation (Telegram Bot Application Management in Service Registration), performance results must be in accordance with the satisfaction of mothers of toddlers, which means punctuality, the same service for all patients without errors, a sympathetic attitude, and with high accuracy so that it will give birth to a sense of satisfaction in the mothers of toddlers themselves. The better the patient's perception of reliability (Responsiveness), the higher patient satisfaction will be.  If the patient's perception of reliability (Responsiveness) is poor, then patient satisfaction will be lower (Nur Alpiah et al., 2023).

In the guarantee dimension, assurance is provided by the existence of the MAKODAM JAYA innovation (Telegram Bot Application Management in Service Registration) to mothers of toddlers so that many mothers of toddlers, Assurance is knowledge of the product appropriately, employee courtesy in providing services, skills in providing information, ability to provide security and ability to instill patient trust and confidence in the hospital.  The knowledge, politeness, and abilities of those implementing posyandu activities can foster a sense of trust in pregnant women. This is in accordance with other research by Fadlan that assurance and certainty are being able to provide information to mothers of toddlers in a language they can understand, being safe from danger, risk, or doubt, having the skills and knowledge needed to be able to provide certain services (Nur Alpiah et al., 2023).

In the Empathy dimension, the empathy aspect is the ease in carrying out good communication relationships, personal attention, and understanding the needs of mothers of toddlers as customers and acting in the interests of mothers of toddlers.  Nurses are expected to be able to understand each patient's personal difficulties and help them out of their difficulties. Patients will feel cared for by the posyandu staff in the MAKODAM JAYA (Telegram Bot Application Management in Service Registration) innovation if what is needed and issued is responded to well by the nurse, and a sincere and individual or personal attitude is given by the posyandu officer to the patient, such as the ease of contacting the posyandu officer with the MAKODAM JAYA innovation (Telegram Bot Application Management in Service Registration) so as to communicate with toddler mothers and toddler mothers' families.  The better the toddler's mother's perception of caring (empathy), the higher the patient satisfaction will be.  And if the patient's perception of caring (empathy) is poor, then patient satisfaction will be lower (Tarmizi et al., 2023).

## CONCLUSION

MAKODAM JAYA Innovation (Telegram Bot Application Management) Increases Satisfaction with Registration Services including Tangible, reliable, Responsiveness, Assurance and Empathy indicators at Posyandu Klopo Sepuluh.

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