Quality of Contraceptive Services in Couples of Childbearing Age in Tarakan City During the COVID-19 Pandemic

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Abstract

The COVID-19 pandemic disrupts the continuity of reproductive health services, including family planning (family planning (KB) services, and has the potential to increase contraceptive discontinuation and unplanned pregnancies. In Tarakan City, the use of contraceptives during the pandemic was dominated by short-term methods, while the use of IUDs and implants was relatively low. This study aims to analyze the relationship between service time, service location, infrastructure, and healthcare providers with the quality of contraceptive services in couples of childbearing age in Tarakan City. This study uses an analytical quantitative design with a cross sectional approach. The sample amounted to 396 respondents who were selected through proportional stratified random sampling from six health center work areas. Data were collected using a structured questionnaire and analyzed by Chi-square test. The results showed that the location of the service was significantly related to the quality of contraceptive services (p = 0.048). Infrastructure and healthcare providers were also significantly related to service quality, each with p = 0.001. In contrast, service time was not significantly related to service quality (p = 0.415). This study concludes that strengthening infrastructure, contraceptive logistics security, and the capacity of midwives as key healthcare providers are important to maintain the quality of family planning services during the health crisis.

Keywords: ***Family Planni ng, Contraception, COVID-19, Quality of Service, Tarakan City***

INTRODUCTION

The COVID-19 pandemic has not only created a burden of infectious diseases, but has also disrupted basic health services, including reproductive health services and family planning. Policies restricting mobility, concerns about transmission, limited personal protective equipment (PPE), shifting priorities of health services, and disruption of contraceptive supply chains have caused many acceptors (contraceptive users) to experience obstacles in obtaining safe, timely, and sustainable contraceptive services (Aly et al., 2020a; M & Behera, 2023a; Ssebunya et al., 2022). From the perspective of reproductive health rights, disruption of family planning (KB) services has the potential to increase the risk of contraceptive discontinuation, unmet family planning needs, unplanned pregnancies, pregnancy complications, and maternal and child health burdens.

In Indonesia, the COVID-19 pandemic has had an impact on the decline in family planning services nationally. BKKBN data shows that in the early days of the pandemic there was a decrease in the use of modern contraceptives, especially in long-term contraceptive methods (MKJP). IUD use decreased from 36,155 to 23,383 users, or a decrease of about

35.3%. In the same period, the use of implants also decreased from 81,062 to 51,536 users, or a decrease of about 36.4% (Dwijayani, 2020a). The decrease in IUD and implant use of around 35% needs to be understood as part of reproductive health problems. Restrictions on services, public concerns about accessing health facilities, and disruption of contraceptive services have contributed to the decline in the use of long-term contraceptive methods (MKJP). The decline in the use of MKJP, especially the use of IUDs and implants, needs special attention because these methods have a high level of effectiveness and play an important role in preventing unplanned pregnancies. If the acceptor switches from MKJP to a short-term method or discontinues contraception, it will increase the risk of contraceptive failure, and ultimately the condition can increase unplanned pregnancy, pregnancy complications, and the risk of maternal death (Dwijayani, 2020b; United Nations Population Fund, 2020), especially in times of crisis when access to antenatal and childbirth screening services is also disrupted (Alvergne & Stevens, 2021; Pfitzer et al., 2020a; Tin et al., 2020). Thus, the decline in the use of MKJP not only shows a disruption in the achievement of the family planning program, but is also an early indicator of increasing vulnerability of women of reproductive age to long-term health risks. While antenatal services, childbirth, and obstetric referrals are also affected by the pandemic, unplanned pregnancies can weigh on the health system and increase the risk of maternal morbidity and mortality (Cousins, 2020; Pfitzer et al., 2020b).

Tarakan City has characteristics as an economic center, population mobility, education, and health service referral center within the regional scope of North Kalimantan Province. This condition causes the need for reproductive health services, including family planning services, to be high and diverse. In addition, population growth, limited area area, and uneven distribution of population between sub-districts make access to family planning services an important issue, especially when health services experience restrictions during the COVID-19 pandemic.

Local data shows that the use of contraceptives in Tarakan City during the pandemic is dominated by short-term methods. Study by (Padlilah et al., 2022) reported that in March-April in Tarakan City there were 4,560 birth control acceptors, with details of 4,217 injection acceptors (92.48%), 294 pill acceptors (6.45%), 20 condom acceptors (0.44%), 15 implant acceptors (0.33%), and 14 IUD acceptors (0.31%). This data shows that the use of MKJP, especially IUDs and implants, is still very low compared to injectable methods. The dominance of injectable contraceptives indicates that the continuity of services is highly dependent on the ability of the acceptor to make a repeat visit to the health facility. During a pandemic, when

people's mobility is restricted and visits to health facilities have the potential to decrease, reliance on short-term methods can increase the risk of delayed reinjections, contraceptive discontinuation, and unplanned pregnancies.

In the 2021 research period, Tarakan City was also in a pandemic control situation that affected mobility and service utilization patterns. The Tarakan City Government implements a policy of restricting community activities, including limiting the capacity of activities and the obligation to strictly implement health protocols. In the context of family planning services, this situation has the potential to affect service time, access to service locations, readiness of infrastructure, and acceptor interaction with healthcare providers. Therefore, Tarakan City is a relevant location to assess the quality of contraceptive services during the pandemic, especially in areas with archipelago characteristics, high population mobility, inequality of access to health facilities, and low long-term contraceptive use.

A literature review shows that the COVID-19 pandemic has had a significant impact on the sustainability of family planning (KB) services in various countries. (M & Behera, 2023) found that women's health services experienced disruptions during the pandemic, including contraceptive services. (Comfort et al., 2022) suggests that telemedicine can be an adaptive strategy for maintaining contraceptive services when face-to-face services are limited. (Soin et al., 2022) emphasizing the importance of the value, preference, and readiness of health workers is an important factor in providing contraceptive services that are responsive to the needs of service users. Furthermore, (Hassan et al., 2024) shows that the quality of family planning services is greatly influenced by the competence of health workers, the effectiveness of communication and counseling, the availability of contraceptives, and the support of the health service system. However, these studies generally address service barriers at the national or cross-country level and have not specifically examined the relationship between service time, service location, infrastructure, and healthcare providers to the quality of family planning services in archipelagic areas such as Tarakan City.

Several studies in Indonesia have examined family planning (KB) services during the COVID-19 pandemic. Studies at the national level show that restrictions on face-to-face services, restrictions on visits to health facilities, and changes in health system priorities have an impact on decreasing access to contraceptive services and family planning participation (Rahmawati et al., 2023; Yunifitri & Butarbutar, 2021a). Another study found that the number of active family planning participants and new family planning participants decreased at the beginning of the pandemic, while the unmet need for family planning services showed a

tendency to increase due to a decrease in the intensity of counseling and family planning service operations (Witono & Parwodiwiyono, 2020). Another study shows that the use of contraceptives in health facilities is affected by the Large-Scale Social Restrictions (PSBB) policy, so reproductive health services and family planning need to remain positioned as priority services (Aprillia et al., 2020). In addition, the sustainability of family planning services during the pandemic is also influenced by the role of midwives, family planning extension workers, cadres, as well as community-based service strategies and online media (Kurniawan et al., 2023; Yunifitri & Butarbutar, 2021b). However, these studies have not provided a detailed analysis of the service quality components at the facility level, especially those including service time, service location, availability of infrastructure, and healthcare providers. Thus, the gap in this study lies in the limited local empirical evidence regarding the factors of facilities and healthcare providers that determine the quality of contraceptive services during the COVID-19 pandemic in Tarakan City.

The novelty of this research lies in the analysis of the quality of contraceptive services based on the local context of Tarakan City as an archipelagic area, by examining four aspects of services that can be intervened programmatically, namely service time, service location, availability of infrastructure, and healthcare providers. This study not only describes the decline in family planning services during the COVID-19 pandemic, but also identifies the service components that have the strongest relationship with the quality of contraceptive services. Thus, this research provides an empirical contribution for local governments, health offices, and health centers in formulating strategies to strengthen the resilience of family planning services. This strategy can be directed through improving service infrastructure, strengthening the contraceptive logistics system, optimizing the referral system, and increasing the capacity of midwives as the main provider of contraceptive services at the health facility level.

Based on this description, this study aims to analyze the relationship between service time, service location, infrastructure, and healthcare providers with the quality of contraceptive services in couples of childbearing ages in Tarakan City during the COVID-19 pandemic. The research hypotheses proposed are: (1) there is a relationship between service time and the quality of contraceptive services; (2) there is a relationship between the location of the service and the quality of contraceptive services; (3) there is a relationship between infrastructure and the quality of contraceptive Services; and (4) there is a relationship between healthcare

providers, especially the competence of midwives in counseling and contraceptive services, and the quality of contraceptive services.

METHODS

This study used a quantitative design with a cross sectional approach, which measures independent and dependent variables at one point. This design was chosen because it is efficient for identifying relationships between variables in large populations. This study was conducted at all public health centers in Tarakan City, North Kalimantan Indonesia: Karang Rejo, Gunung Lingkas, Sebengkok, Juata, Mamburungan and Pantai Amal Health Centers. Data collections was carried out from March to May 2021. This study population was all couples of reproductive ages (PUS) in Tarakan city, totaling 42,129 people. Inclusion criteria were: (1) couples of reproductive ages actively using contraception, (2) willing to become respondents by signing informed consent, and (3) residing in Tarakan City for at least the past 6 months. The exclusion criterion was couples who were pregnant or in the postpartum period of less than 42 days. The sample size was determined using the Slovin formula with a 5% error margin: 396 respondents. The sampling technique used proportionate stratified random sampling according to the proportion of couples reproductive age in each health center area. The sample distribution per health center was: Karang Rejo Health center (114 respondents), Gunung Lingkas Health Center (80 respondents), Sebengkok Health Center (72 respondents), Juata Health Center (72 respondents), Mamburungan Health Center (43 respondents) and Pantai Amal Health Center (15 respondents).

The independent variables in this study consisted of four factors. The first factor was service time, defined as the minimum time required to serve patients from the moment, they entered the registration area until they left the service area. It was measured using 10 items, with scores categorized as good (≥7) and not good (<7). The second factor was service place, defined as the place or room used for family planning services. It was measured using 6 items, with scores categorized as good (12-18) and not good (0-6). The third factor was infrastructure, defined as the equipment and infrastructure used to provide family planning services, adapted to the conditions of the COVID-19 pandemic. It was measured using 6 items, with scores categorized as good (12-18) and not good (0-6). The fourth factor was healthcare provider, defined as health workers (midwives) providing family planning services at health centers. It was measured using 10 items, with scores categorized as good (20-30) and not good (0-10).

The dependent variable was quality of family planning services, defined as the ability of staff to perform their duties in providing services and support with full commitment and

problem-solving ability during service delivery. Measured by 10 items, scored categorized as good (20-30) and not good (0-10).

The instrument used was a questionnaire consisting of 50 closed ended questions. The questionnaire was developed by the researcher based on literature views and family planning service guidelines during the pandemic from Indonesian Ministry of Health. Before use, the questionnaire was tested for validity and reliability. Validity test used the Pearson Product Moment formula with 30 respondents having similar characteristics. The validity test results showed that all 50 items had R-values > r -table (0,361) at α=0.05, thus declared valid. Reliability test used Cronbach alpha formula. The test results showed α values of 0.892 for service time, 0.874 for service place, 0.901 for infrastructure, 0.913 for healthcare providers and 0.887 for quality of family planning services. All α values >0.70 thus a questionnaire was declared reliable.

Data were collected through direct interviews using the questionnaire. The researcher and three trained enumerators conducted interviews with respondents who came to health centers for family planning services. All COVID-19 health protocols were applied during data collection including wearing mask, using hand sanitizer and maintaining a minimum distance of 1 meter from respondent.

Data processing was carried out through editing (checking data completeness), coding (assigning numerical codes), data entry (entering data into computer) and tabulation (creating frequency distribution tables). Data analysis used SPSS version 17.0. Univariate analysis was performed to describe respondent characteristics (age, education, contraceptive type, duration of use, side effects) and the frequency distribution of each independent and dependent variable. Results are presented in frequency distribution tables. Bivariate analysis was conducted to determine the relationships between each independent variable (service time, service place, infrastructure, healthcare provider) and the dependent variable (quality of family planning services). The statistical test used was Chi Square with a 95% confidence level (α=0.05). Hypotheses were considered significant if the p-value ≤ 0.05.

This study received ethical approval from the Health Research Ethics Committee of Universitas Borneo Tarakan with letter number: 32/KEPK-FIKES UBT/VII/2023. All respondents provided written informed consent before participation. Respondent identities were kept confidential by using only respondent codes on questionnaire sheets. The priciples of beneficences, non-maleficence, autonomy and justice were applied in this study.

RESULTS

Characteristics of respondents based on the area of the health center

This study involved 396 respondents who were couples of reproductive ages actively using contraception in six health center working areas in Tarakan City. Respondent characteristics are presented in Table 1.

Table 1. Respondent Characteristic

Characteristics	Frequency (n)	Percentage (%)
Age		
<20 years	14	3.5
20-30 years	186	47.0
31-40 years	154	38.9
41-50 years	39	9.8
50 years	3	0.8
Education		
Elementary school	42	10.6
Junior high school	68	17.2
Senior high school	215	54.3
Diploma	31	7.8
Bachelor's degree	37	9.3
Others	3	0.8
Contraceptive Type		
Pill	19	4.8
Injectable	308	77.8
Implant	28	7.1
IUD	18	4.5
Condom	23	5.8
Durations of use		
0-6 months	67	16.9
1 year	89	22.5
2 years	112	28.3
3 years	78	19.7
>3 years	50	12.6
Side effects experienced		
Dizziness	45	11.4
Headache	38	9.6
Nause/vomiting	24	6.1
Mood swings	31	7.8
Weigh gain	67	16.9
No side effects	191	48.2

Based on table 1, the majority of respondents were aged 20-30 years (47.0%), had senior high school educations (54.3%), used injectable contraceptives (77.8%), had been using contraceptives for 2 years (28.3%), and experienced no significant side effects (48.2%).

The frequency distribution of independent variables (service time, service place, infrastructure, healthcare provider) and dependent variable (quality of family planning services) is presented in Table 2.

Table 2. Descriptive Statistics

Variable	Category	Frequency (n)	Percentage (%)
Service time	Good	233	58.8
	Not Good	163	41.2
Service place	Good	387	97.7
	Not Good	9	2.3
Infrastructure	Good	290	73.2

Variable	Category	Frequency (n)	Percentage (%)
	Not Good	106	26.8
Healthcare provider	Good	250	63.1
	Not Good	146	36.9
Quality of FP services	Good	321	81.1
	Not Good	75	18.9

Table 2 shows that the majority of respondents rated service time (58.8%), service place (97.7%), infrastructure (73.2%) and Healthcare providers (63.1%) as good. Overall quality of family planning services was rated as good by 81.1 % of respondents.

The results of bivariate analysis examining the relationships between each independent variable and the quality of family planning service using the Chi-Square test are presented in Table 3.

Table 3. Association between service place and quality of family planning service

Variable	Quality of FP services		Total	p-value
	Good Quality	Poor Quality		
Service time				
Good	192 (48.5%)	41 (10.4%)	233	0.415
Not Good	129 (32.6%)	34 (8.6%)	163	
Total	321 (81.1%)	75 (18.9%)	396	
Service place				
Good	316 (79.8%)	71 (17.9%)	387	0.048
Not Good	5 (1.3%)	4 (1.0%)	9	
Total	321 (81.1%)	75 (18.9%)	396	
Infrastructure				
Good	273 (68.9%)	17 (4.3%)	290	0.001
Not Good	48 (12.1%)	58 (14.7%)	106	
Total	321 (81.1%)	75 (18.9%)	396	
Healthcare providers				
Good	238 (60.1%)	12 (3.0%)	250	0.001
Not Good	83 (21.0%)	63 (15.9%)	146	
Total	321 (81.1%)	75 (18.9%)	396	

Based on Table 3, among 233 respondents who rated service time as good 192 (48.5%) rated service quality as good and 41 (10.4%) rated is not good. Among 163 respondents who rated service time as not good, 129 (32.6%) rated service quality as good and 34 (8.6%) rated is not good. The statistical test showed a p-value of 0.415(>0.05), thus there was no significant association between service time and quality of family planning services.

Among 387 respondents who rated service place as good 316 (79.8%) rated service quality as good and 71 (17.9%) rated is not good. Among 9 respondents who rated service place as not good 5 (1.3%) rated service quality as good and 4 (1.0%) rated it as not good. The statistical test showed a p-value of 0.048 (≤0.05), thus there was a significant association between service place and quality of family planning services.

Among 290 respondents who rated infrastructure as good 273 (68.9%) rated service quality as good and only 17 (4.3%) rated is not good. Conversely among 106 respondents who

rated infrastructure as not good 48 (12.1%) rated infrastructure as good and 58 (14.7%) rated it as not good. The statistical test showed a p-value of 0.001 (≤0.05), thus there was a significant association between infrastructure and quality of family planning services.

Among 250 respondents who rated healthcare provider as good 238 (60.1%) rated service quality as good and only 12 (3.0%) rated is not good. Among 146 respondents who rated health provider as not good 83 (21%) rated service quality as good and 63 (15.9%) rated it as not good. The statistical test showed a p-value of 0.001 (≤0.05), thus there was a significant association between healthcare provider and quality of family planning services.

Overall, of the four independent variables examined, service place, infrastructure, and healthcare provider showed statistically significant associations with the quality of family planning services (p≤0.05), while service time did not show a significant association (p>0.05).

DISCUSSION

This study shows that service locations, infrastructure, and healthcare providers are significantly related to the quality of contraceptive services during the COVID-19 pandemic in Tarakan City. In contrast, the time of service showed no significant relationship. This pattern of findings indicates that the quality of family planning services in crisis situations is more determined by the affordability of the location, the readiness of facilities, the availability of supporting facilities, and the competence of healthcare providers than simply the length or operational time of the service.

Service location was significantly related to the quality of contraceptive services (p = 0.048). These findings show that physical access remains an important determinant in family planning services during the pandemic. In Tarakan City, the characteristics of the spread area and the difference in affordability between villages can affect the ease of acceptors accessing health centers. During the pandemic, mobility restrictions, fear of infection, and changes in the flow of visits reinforced the role of service locations as a determining factor in quality. These findings are in line with the study (Bereku et al., 2022) and (Bawah et al., 2021) which indicates that physical barriers to access and limitations in services may lead to delays or termination of contraception. In the context of Indonesia, (Rahayuwati et al., 2023) found that during the COVID-19 pandemic family planning services at health centers experienced restrictions, especially for long-term contraceptive methods, so cooperation between health workers, cadres, community leaders, and local governments became important to maintain family planning participation. Globally, experiences in some countries show that restrictions on

mobility during health crises have an impact on the use of reproductive services, especially for women who live far from health infrastructure or rely on public services.

In the context of Tarakan City, the significance of service locations can also be read as an issue of access justice. A well-rated service location not only means that it is geographically close, but it is also easy to reach, safe, has a clear service flow, and does not cause excessive concern about COVID-19 transmission. Therefore, strengthening family planning services is not enough to be carried out in the health center, but needs to be expanded through community-based services, integrated service posts, scheduled visits, and a responsive referral system for acceptors who experience mobility barriers.

Infrastructure showed a very strong association with the quality of contraceptive services ($p = 0.001$). These findings confirm that the availability of contraceptives, safe service rooms, PPE, handwashing facilities, waiting rooms that allow distance restrictions, and the completeness of service tools are important components in maintaining service quality during the pandemic. These results are in line with Aly et al. (2020b), which emphasized that access to contraception during the pandemic was affected by the readiness of service systems and supply chains. Contraceptive supply chain disruptions can reduce method choices, increase the risk of switching methods, and lower acceptor satisfaction with services.

The interpretation of infrastructure needs to be placed in the framework of contraceptive security. Contraceptive safety means that each acceptor can obtain the desired contraceptive method in a timely, affordable, safe, and quality manner. (World Health Organization, 2017) emphasized that contraceptive safety requires diagnosis of logistics systems, supply chain adjustments, strategic distribution, manpower adequacy, training, and adequate inventory and financing information. Recent evidence also shows that facilities that have separate counseling rooms and the availability of all contraceptive methods are more likely to provide quality family planning counseling (Abebaw et al., 2024). When stocks of contraception, PPE, or support equipment are limited, healthcare providers tend to limit certain actions, especially MKJP services that require direct procedures. This condition can prompt acceptors to choose short-term methods or delay service. Thus, the digitization of contraceptive logistics, stock monitoring systems, and strengthening distribution between facilities are important strategies to maintain the sustainability of family planning services during times of crisis.

Healthcare providers were also significantly associated with the quality of contraceptive services ($p = 0.001$). These findings strengthen the position of midwives as the gatekeeper of reproductive health services at the primary service level. Midwives not only play

a role in providing contraception, but also provide counseling, helping clients choose methods according to health conditions and preferences, explaining side effects, following up on complaints, and referring acceptors when needing follow-up services. (Soin et al., 2022) emphasized that the values and preferences of health workers have an effect on the acceptance of contraceptive services. (Hassan et al., 2024) also shows that the quality of family planning services is influenced by communication, competence, availability of resources, and the ability of health workers to build trust with clients. Systematic review (Manzer et al., 2024) Reinforcing these findings by showing that healthcare providers directly affect the client experience and quality of contraceptive services, but often face barriers such as time constraints, inability to perform same-day methods, and lack of training on long-term methods and counseling approaches that are sensitive to client needs.

During the pandemic, the role of midwives has become increasingly complex because they have to balance the need for contraceptive services with transmission prevention protocols. Healthcare workers face the risk of infection, psychological stress, workload, procedural changes, and the need to adapt to remote services. Therefore, routine training for midwives not only needs to include technical aspects of contraception, but also risk communication, empathy-based counseling, the use of digital media, triage of family planning services, and psychosocial support for healthcare providers. Findings (Ontiri et al., 2025) suggests that empathy-based provider training and community awareness activities can support contraceptive use. (Rahayuwati et al., 2023) also emphasized that cross-sectoral involvement, including midwives, cadres, family planning extension workers, community leaders, and local governments, is needed to sustain family planning programs during the pandemic. Thus, the quality of healthcare providers is a strategic factor that needs to be maintained through supervision, training, institutional support, and community collaboration.

Time of service was not significantly related to the quality of contraceptive services ($p = 0.415$). Statistically, these results show that the difference in perception of service time is not strong enough to differentiate the quality of service perceived by respondents. One possible interpretation is that acceptors have adapted to service systems during the pandemic, such as scheduled queues, restrictions on the number of visits, or scheduling arrangements by health centers. In addition, limited service time may be compensated by good communication, scheduling certainty, community-based services, or remote consultations. (Comfort et al., 2022) suggests that telemedicine can help maintain contraceptive services when in-person services are restricted. (Lindberg et al., 2022) It also found that telehealth helped bridge the gap in

contraceptive services during the pandemic, although the quality of telehealth-based services still needs to be improved to be on par with in-person services. Therefore, the insignificant findings on the time variable do not mean that service time is not important, but it does suggest that service time needs to be viewed alongside other factors such as schedule certainty, service flow, officer communication, and digital access alternatives.

These findings also provide policy implications. The Tarakan City Government needs to strengthen the community-based family planning service model, especially for areas that have barriers to access to health centers. Community-based services can be carried out through the integration of cadres, family planning extension workers, independent practice midwives, and health centers. In addition, the contraceptive referral system needs to be clarified so that acceptors who need MKJP services can quickly obtain service schedules and locations. Digitization of contraceptive logistics needs to be developed to monitor the availability of stock at each health center and prevent the shortage of contraceptives. This strategy is important to ensure that the quality of family planning services is maintained not only during the pandemic, but also in other health emergency situations.

CONCLUSIONS

This study concludes that the quality of contraceptive services for couples of childbearing age in Tarakan City during the COVID-19 pandemic is significantly related to service locations, infrastructure, and healthcare providers. Infrastructure and healthcare providers have the strongest significance, each with $p = 0.001$, so both can be seen as the main drivers of service quality. Service time is not significantly related to service quality, possibly due to acceptor adaptations to schedule arrangements, service flows, and service mechanisms during the pandemic.

The limitations of this study lie in the *cross-sectional design* that does not allow the drawing of causal conclusions, the use of perceptual data that is at risk of bias, the limitation of generalization in the context of Tarakan City, and the unavailability of demographic analysis and types of respondent contraceptives. Follow-up research is recommended using a longitudinal design or mixed method to assess changes in contraceptive use, the sustainability of MKJP use, and the possible impact of the pandemic on the post-pandemic increase in births in North Kalimantan.

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