
Analysis Effect of Quality Service and Patient's Knowledge of Patients Attitude Awareness of Treatment and its Impact on Dental Patient Visit at Puskesmas Situ Udik Bogor, West Java, Indonesia

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ABSTRACT

Background: Dental and oral disease attacks almost everyone in the world. Nevertheless, majority of people pay less attention to look after their dental and oral health. Therefore, that case gave rise the severe level. The main cause of severity of dental disease is the disobedience of the patients to the determined medical service standards.

Objective: The purpose of this study is to reveal the impact of the service quality and knowledge of the patients with regards to the treatment awareness behavior and to the re-visit of dental patients at community health center (Puskesmas) Situ Udik, Bogor district, west Java, Indonesia 2018.

Method: The research design used in this research is quantitative analytics. As for the analysis test, the path analysis is used. The activities were carried out in Dental Polyclinic of Puskesmas Situ Udik in February 2018 where sampling was done by using random sampling system with 143 respondents.

Result: The statistic test shows that the factors that influence the patient's re-visit are quality of service (p value = 0.011, contribution 22,5%) and behavior of the patients (p value = 0,045, contribution 17,4%). While the factors that influence the behavior of the patients is quality (p value = 0.000, contribution 45.6%). In addition, simultaneously the quality of services, knowledge as well as behavior affect the re-visit (p value = 0.000 and contribution of 11.6%)

Conclusion: 1) to improve the quality of service at Puskesmas Situ Udik and; 2) to provide the patients with education or health promotion in order to improve their knowledge as well as behavior with regards to dental diseases.

Keywords: *repeat visits, behavior, service quality, patient knowledge, Indonesia*

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1. INTRODUCTION

Dental and oral services are undertaken to maintain and improve public health status in the form of improved dental hygiene, dental disease prevention, dental disease treatment, and dental restoration, and it was carried out by government, local governments and / or communities in a consolidated, integrated and sustainable manner. Such services can be

implemented through individual dental services, community dental services, and health program at schools¹

Dental and oral health issues are still a problem that needs serious attention in some developed countries as well as developing countries including Indonesia. Dental caries and periodontal disease are the most common dental and oral diseases, and demonstrate major public health problems due to their high prevalence and incidence in almost all places of the world, that impact on individuals, communities and the costs of treatment. Data showed that dental and mouth disease affects almost everyone in the world. In developing countries, dental caries disease has increased due to increased sugar intake. Periodontal disease prevalence is very high in the world especially in children and adolescents which reach 80% in both developed and developing countries²

According to the 2013 data of Direktorat Bina Upaya Kesehatan Dasar, Direktorat Jenderal Bina Upaya Kesehatan, Ministry of Health of Republic Indonesia 2013, the national prevalence of dental-oral problem is 25.9%, the prevalence of caries experience is 72.3%, and the active national caries prevalence is 53.2%. Thus, efforts are still needed to improve the dental health of Indonesians. Dental and oral diseases are the 6th highest disease that Indonesians complain about and the disease with the 4th most expensive disease in its treatment³

Various research results indicated that anyone who is less concerned about or does not look after his/her oral and dental health can result in or cause seriously illnesses. Dental health is one of very important part of the human body that if having problems with it (toothache), she/he will have difficulty to speak, eat and therefore causing disturbed activity¹³.

The level of oral hygiene has a very important role in taking care of and maintaining dental health and periodontal tissue, therefore the role of oral and dental hygiene as an effort to improve the level of optimal health is very important, because dental and oral disease are the diseases with the greatest prevalence of national health problems⁴

One of the dental health problems that often affect people's dental health is dental abscess. People are accustomed to ignorant of dental problems, so that the problem often becomes bigger¹³. Patients with dental abscess often allow the illness to get worsen, usually the patients will go to the doctor after the level of his illness got worse. Dentists have medical procedures to be followed by patients, but sometimes patients do not follow the applicable medical procedures to allow the severity of dental abscesses to get worse. Any damage to the tooth can result in the health of the patient being disturbed, which not only disrupts the health partially but also thoroughly and the effect is decreased productivity. The main cause of severity in abscess cases is patient noncompliance with defined medical service standards. The main causes of patient non-compliance behavior to existing service procedures are due to patient demographic factors, health insurance, and other factors⁴

One of efforts to prevent and improve service to the case of dental abscess service is to improve the services of community health service (puskesmas) facilities where the quality is one indicator that can encourage the patients to complete treatment in combating dental abscess. Nevertheless, sometimes the behavior of patients is disobedient and they do not do re-visit in accordance with determined medical procedures⁵.

Erlianti's study (2015) on adherence of dental abscess patients showed that factors affecting patient's compliance especially on patient's re-visit were patient's behavior, service quality and patient's satisfaction (p value > alpha 0,05). In addition, in the Mangundjaja study (2013), the patient's behavior and patient satisfaction are closely related to the re-visit of the dental abscess patient, the patient's behavior tends to ignore and refuses to re-treat the dental abscess disease, they do not implement the medical properly⁷.

Aulia's research, et al (2017)⁸ in Banjarmasin showed that the quality of dental health services is closely related to patient satisfaction (p value < α , 5%). Firman's research (2014) on factors causing patient compliance to follow medical procedures in the treatment of dental diseases (dental abscess) is the behavior and satisfaction of the patients. Patients who are satisfied with dental services tend to follow and adhere to medical procedures that doctors recommend^{6,14}.

Preliminary study conducted by Researcher at Puskesmas Situ Udik during the last 12 months showed the level of adherence or the participation of the patient following the dental medical procedure is only 6.0%. The rest are reluctant to complete treatment and usually they will only return when the severity of the disease increases. The following is the dental patient data at Puskesmas Situ Udik for the last 9 months in 2017:

Table 1. Number of Patients and Repeat Patient Visit at Puskesmas Situ Udik Bogor in 2017

| Month | Number of Patient | Re-visit | Percentage (%) |
|-----------|-------------------|----------|----------------|
| January | 379 | 21 | 6,0 |
| February | 320 | 9 | 3,0 |
| March | 304 | 6 | 2,0 |
| April | 238 | 6 | 3,0 |
| May | 211 | 12 | 5,6 |
| June | 381 | 3 | 0,78 |
| July | 167 | 7 | 4,19 |
| August | 363 | 9 | 2,47 |
| September | 381 | 9 | 2,36 |

Puskesmas Situ Udik has a health service area covering 4 villages, with a total population of 36,184 people. According to educational background in this region, Population distribution is dominated by people with education level of junior high is 19.9%, elementary school is 16.4%, senior high school is 12.7%, "No school experience" / pre-school is 9,12%, diploma is 0.45% and the higher education is 0.63% only. The data from Population and Civil Registry (Dinas Kependudukan Dan Catatan Sipil) in 2012 that the "No school experience" is 5.38%, the population who do not finished elementary school level is 3.99%, the population with elementary school level is 44.11%, the population aged 10 years and over according to the level of education that finishes junior high education is 18.89%, the data of the population who finishes senior high school education is 22.05%, the percentage of graduation rate of higher education (Academy / Diploma) is 4.61% and the percentage of population aged 10 years and over according to the level of education that completes undergraduate education is 0.26%. This situation confirmed that most levels of community education in this region are still low, this is related to the knowledge and encouragement of people to perform dental treatment in accordance with recommended medical procedures.

Based on the data above, the researcher would like to find out the determinant of the dental patient's re-visit at Puskesmas Situ Udik and find out the influence of service quality and the knowledge to the treatment awareness behavior of the patients and its impact on the re-visit.

2. METHOD

The type of research used in this study is quantitative analytics using correlation regression study approach. The design used in this study is the parametric statistical approach with the type of correlation regression research design, which connected between exogenous variables - intervening and endogenous, combined with Path Analysis approach, with α 0.05.

This research was conducted at Puskesmas Situ Udik, Bogor, West Java, in October 2017 - March 2018. The population is all outpatients who visited the poly dental of Puskesmas Situ Udik in February year 2018, with the average of outpatient is \pm 300 persons/month. The sample is a portion taken from the entire object under study which is considered as a representation of the entire population. The sample size consisted of 143 people. The sampling method used was simple random sampling method¹⁵.

The type of data used is the primary data. Testing the validity and reliability passed on 20 respondents and the results confirmed valid and reliable. The data analysis model used to analyze the relationship between exogenous variables X with intervening Y and endogen Z is multivariate parametric statistical approach.

3. RESULT

The path analysis technique is used in testing the contribution of the path coefficients in each path diagram of the causal relationship between variables X1, X2, Y to Z. This is to find out the level of relationship between service quality (X1), knowledge (X2) and behavior (Y) to re-visit (Z) is done by the dissemination of sealed/closed questionnaire and the analysis used correlation technique which is the basic of path coefficient calculation. This test is carried out through two stages of analysis, overall testing (model 1) and individual testing (model 2)

Structure Model

Table 2. The Contribution of Quality, Knowledge and Behavior to Re-Visit

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .341 ^a | .116 | .098 | 2.878 | .116 | 6.406 | 3 | 146 | .000 |

a. Predictors: (Constant), Patient's Behavior, Knowledge, Service Quality

b. Dependent Variable: Re-visit

Table 3. The Simultaneous Effects of Quality, Knowledge and Behavior to Re-Visit

| Model | Sum of Squares | Df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|-------|-------------------|
| 1 Regression | 159.148 | 3 | 53.049 | 6.406 | .000 ^b |
| Residual | 1208.992 | 146 | 8.281 | | |
| Total | 1368.140 | 149 | | | |

a. Dependent Variable: Re-visit

b. Predictors: (Constant), Patient's Behavior, Knowledge, Service Quality

Table 4. The Individual Influence of Quality, Knowledge and Behavior to Re-Visit

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|-------|--------------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 19.603 | 4.233 | | 4.631 | .000 |
| | Service Quality | .075 | .029 | .225 | 2.572 | .011 |
| | Knowledge | -.054 | .207 | -.021 | -.263 | .793 |
| | Patient's Behavior | .257 | .130 | .174 | 1.979 | .050 |

a. Dependent Variable: Re-visit

Table 4 showed that individually the variables that affect the visit are service quality (sig.0.011) and patient attitude (sig.0,050). While the knowledge variable has no effect (sig 0,793)

Structure Model 2

Table 5 The Contribution of Quality and Knowledge to Behavior

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .465 ^a | .216 | .206 | 1.831 | .216 | 20.283 | 2 | 147 | .000 |

- a. Predictors: (Constant), Knowledge, Service Quality
- b. Dependent Variable: Patient's Behavior

Table 6 The Simultaneous Influence of Quality and Knowledge to Behavior

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|-----|-------------|--------|-------------------|
| 1 Regression | 136.000 | 2 | 68.000 | 20.283 | .000 ^b |
| Residual | 492.833 | 147 | 3.353 | | |
| Total | 628.833 | 149 | | | |

- a. Dependent Variable: Patient's Behavior
- b. Predictors: (Constant), Knowledge, Service Quality

Table 7 Individual Influence of Quality and Knowledge to Behavior

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|-----------------|-----------------------------|------------|---------------------------|-------|------|
| | B | Std. Error | Beta | | |
| 1 (Constant) | 14.950 | 2.394 | | 6.244 | .000 |
| Service Quality | .104 | .017 | .456 | 6.237 | .000 |
| Knowledge | .132 | .131 | .073 | 1.005 | .317 |

- a. Dependent Variable: Patient's Behavior

The summary from Table 2 model is obtained by R square = 0,216, it means that simultaneously the service quality factor (X1) and knowledge (X2) contribute 21,6% to patient attitude (Y) in performing treatment. While the individual (table 4.8) quality contribution (X1) on the behavior of patients by 45.6%, and knowledge (X2) of 7.3%. Then in table 4.7 Anova test obtained the value of F = 20,283 with probability value (sig) = 0,000, because the value of sig <0,05, then the decision is Ho rejected and Ha accepted, which means quality and knowledge influence simultaneously to behavior of patient during get medical services at Puskesmas Situ Udik.

A. Individual Testing [(X1 to Z), (X2 to Z), and (Y to Z)]

1) Service Quality Contributes to Re-Visit

As shown in table 4 column sig (significant) Coefficients, the coefficient value $p_{zx1} = 0,225$. While the value of sig. 0.011, means the value of sig 0.011 is smaller than the value of 0.05 0.05 or $0.05 > 0.011$, meaning Ho is rejected and Ha accepted means the coefficient of path analysis is significant. Thus, statistically the service quality factor contributes positively to the patient's re-visit. Thus, the conclusion is that there is a significant influence between the qualities of service to the re-visit at the Puskesmas Situ Udik.

2) Knowledge Contributes to Re-Visit

As shown in table 4 column sig (significant) Coefficients, the coefficient value $p_{zx2} = 0,021$. While the value of sig 0.793 then the knowledge factor did not contribute significantly to repeat visits. Thus, the conclusion is that there is no significant effect between the knowledge toward patient's re-visits at Puskesmas Situ Udik.

3) Behavior Contributes to Re-Visit

As shown in table 4 columns sig (significant) Coefficients, the coefficient value $p_{zy} = 0.174$ and sig value $0,050$. There is a significant effect between behaviors toward the patient's re-visit at Puskesmas Situ Udik. Behavior of awareness of treatment contributed $17,4\%$ to patient's re-visit.

4) Service Quality, Knowledge and Behavior Contribute to Re-Visit

As shown in table 3 column sig (significant) Coefficients, the coefficient value $p_{zyx1x2} = 6,406$ and sig value $0,000$. This means that service quality, patient knowledge and patient behavior of awareness of treatment contribute simultaneously significantly to the patient's re-visit behavior at Puskesmas Situ Udik.

The causal framework of empirical relationships between X1, X2 and Y to Z can be made through the structural equation of Model - 1 as follows:

Model Structure- 1 :

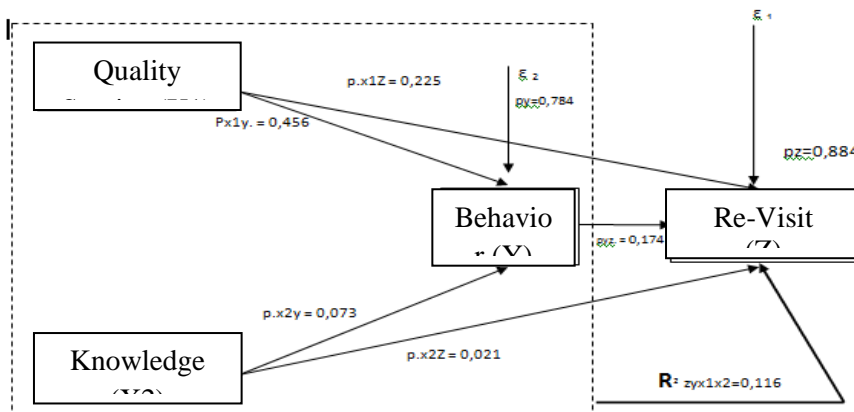
$$Z = p_{zx1} X1 + p_{zx2} X2 + p_{zy} Y + p_z \epsilon_1$$

$$Z = 0,225 X1 + 0,021 X2 + 0,174 Y + 0,884 \epsilon_1$$

R2 value $z_{y.x1.x2}$ or R square can be seen in Table 4.7 Model Summary. To find the value of $P_z \epsilon_1$ (variable residual) is determined by the following formula:

Formula: $P_z \epsilon_1 = 1 - R^2_{zyx2x1} = 1 - 0,116 = 0,884$

Picture 1. Empirical Causal Relation Diagram of X, X2 and Y to Z Model-1



B. Individual Testing [(X1 to Y) and (X2 to Y)]

1) Service Quality Contributes to Patient's Behavior

As shown in table 7 column sig (significant) Coefficients, the coefficient value $p_{yx1} = 0,456$ and value sig $0,000$. This means quality factors contribute significantly to patient behavior of awareness of treatment. The quality has a positive effect to patient behavior of awareness of treatment at Puskesmas Situ Udik.

2) Knowledge Contributes to Behavior

As shown in Table 7 column sig (significant) Coefficients, the coefficient value $p_{yx2} = 0,073$ and value sig $0,317$. This means that the knowledge factor does not contribute to the patient's behavior. The conclusion is that there is no significant effect between knowledge factor and patient behavior of awareness of treatment at Puskesmas Situ Udik.

The causal framework of the empirical relationship between X1, X2 of Y can be made through the structural equation of Model - 2 as follows:

Model Structure - 2 :

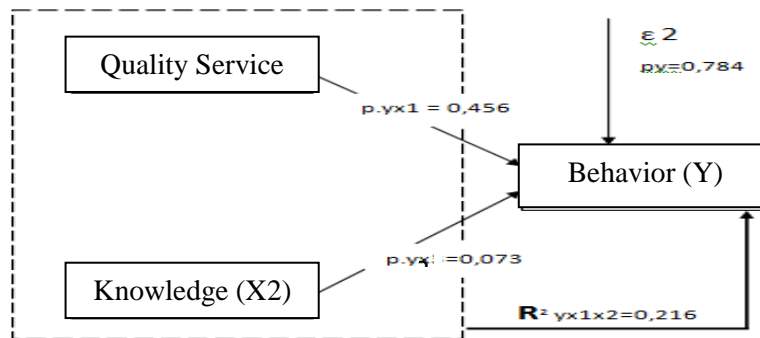
$$Y = p_{yx1} X1 + p_{yx2} X2 + P_y \epsilon_2$$

$$Y = 0,455 X1 + 0,070 X2 + 0,784 \epsilon 2$$

R2 z.x1.x2 value or Rsquare can be seen in table 4.6 Model Summary. To find out the value of $\epsilon 2$ (residual variable) is determined by the following formula:

Formula: $\epsilon 2 = 1 - R^2_{yx1x2} = 1 - 0,216 = 0,784$

Picture 2. Empirical Causal Relation Diagram of X1 and X2 to Y Model-2



4. DISCUSSION

1) Service Quality Contributes to Re-Visit

The results of path analysis on the effect of the quality of service on the patient's re-visit are significant (sig .0,011) and the contribution is 22.5%. The results of this study are consistent with the research of Istiqomah F Nur (2015), Hasbi, Fill Hendra (2012) and Arab et.al (2012), which suggested that there is a significant influence between quality and re-visit. Therefore, the advice to the Puskesmas to review again the balance between the number of patients and the number of officers who serve the patients.

Table 8. Direct and Indirect Influence (N=143)

| Causal Relationship | Magnitude of Causal Relation | | | Sig. |
|----------------------|------------------------------|--------------------------|-------|-------|
| | Direct | Indirect | Total | |
| X1 to Z | 0,225 | | 0,225 | 0,011 |
| X1 to Z through Y | - | 0,225 + (0,456 x 0,174) | 0,305 | - |
| X2 to Z | 0,021 | - | 0,021 | 0,793 |
| X2 to Z through Y | - | 0,021+ (0,073 x 0,174) | 0,033 | - |
| Y to Z | 0,174 | | 0,177 | 0,050 |
| X1 and X2 and Y to Z | 0,116 | - | 0,116 | 0,000 |
| X1 to Y | 0,456 | - | 0,456 | 0,000 |
| X2 to Y | 0,073 | - | 0,073 | 0,317 |
| X1 and X2 to Y | 0,216 | - | 0,216 | 0,000 |

2) Knowledge Contributes to Re-visit

The results of path analysis of the relationship between the knowledge of patients and their behavior in the re-visit treatment are the coefficient value $p_{xz} = 0,021$. However, the effect is not significant (sig 0.793). The results of this study are not in line with previous research experts.

The majority of the respondents have low education (elementary school – junior high school) is 49.3%, secondary education (senior high school) is 42.7% and college is only 8.0%, this means that majority respondents have medium and low education, only 8% who are highly educated. Therefore, the pattern of patient approach should be done by way of education and

counseling in building awareness and behavior of patients to comply with dental medical procedures.

3) Behavior Contributes to Re-Visit

The result of path test analysis on the influence of patient behavior to re-visit is that the coefficient value $\beta_3 = 0,174$ and the value of sig 0,050. This means that the sig value of 0.050 is less than the 0.05 or 0.05 0.05 or 0.05. The results of this study are in line with previous research conducted by Firman (2014) and Mangunjaja (2013).

4) Influence of Simultaneous Quality, Knowledge and Behavior to Re-Visit

The result of simultaneous path analysis between quality, knowledge and behavior to re-visit behavior is that the coefficient value $\beta_{12} = 6,406$ and sig value 0,000. This means that the value of sig 0.000 is smaller than the value of 0.05 or 0.05 0.000, which means H_0 is rejected and H_a is accepted means the coefficient of path analysis is significant. This means that service quality, patient knowledge and patient behavior contribute significantly simultaneously to the patient's re-visit behavior at Puskesmas Situ Udik. The contribution of the quality of service, knowledge and behavior significantly simultaneously to the re-visit, the percentage is 64.06 percent. The results of this study are in line with research conducted by Wei-Jiao Zhou et.al. (2017)⁹.

5) Service Quality Contributes to Patient's Behavior

The result of path analysis about the effect of quality on patient behavior is that the coefficient value $\beta_1 = 0,456$ and value of sig 0,000. This means the value of sig 0.000 is less than the probability value of 0.05 or the value of 0.05 > 0,000. This research is in line with research of TazkiyatunNafsAz-zahroh (2017)¹⁰ which showed that quality affects patient satisfaction level ($p = 0,000$ or $< \alpha 0,05$). Further Anggraini and Afiana research (2013)¹¹ also shows the same results.

6) Knowledge Contributes to Behavior

The result of path analysis on the influence of knowledge on the behavior of the patient is that the coefficient value $\beta_2 = 0,073$ and sig value 0,317. This means that the sig e of 0.317 is greater than the probability value of 0.05 or the value of 0.05 < 0.317.

According to this research, the researcher suggested that health officers at Puskesmas Situ Udik to always gave education / medical education to the patients who have treatment so that they will understand well about the illness and the effect of irregularity in medical treatment.

7) Indirect Influence of Quality to Re-visit

The indirect influence of the quality of service on the re-visit or in other words the effect of service quality on the re-visit through behavior variable, where the statistical test results showed the value of coefficient = 0.305, meaning the contribution of service quality through behavior and its impact on the return visit of 0.305 or 30.5% .

Astuti and Kezuke (2016) argued that quality is one effective marketing strategy. Puskesmas Situ Udik must make the quality of service as marketing strategy in increasing the patient's re-visit rate. If the number of patient visit is greater then it is an indicator that the quality of service is good³.

8) Indirect Influence of Knowledge to Re-Visit

Knowledge variables not only contribute directly to re-visits, on other occasions these variables also indirectly contribute to the re-visit through the patient's behavior variable. The result of path test analysis on the influence of knowledge directly to re-visit visit is the coefficient value $\beta_2 = 0,021$ or in other words the contribution equal to 2,1%, while indirectly contribution of knowledge to re-visit through behavior is equal to 0,033 or in other words its contribution equal to 3.3%. Patient knowledge is considered to be an interpersonal factor associated with the perception and thought of the patients in responding to the service environment encountered at Puskesmas¹².

9) Influence of Simultaneous Service Quality and Knowledge to Patient Behavior

The result of statistical test on the effect of quality, simultaneous knowledge on patient behavior is that the coefficient value $\beta_{12} = 0,216$ and value of sig 0,000. This means that the quality of patient service and knowledge contribute significantly simultaneously to the patient's behavior at Puskesmas Situ Udik. The efforts to improve the quality can be done through improving the cleanliness of the space, facilities, medical equipment, toilets, parking, speed of service, improved level of comfort, officer response, officer competencies, and various services other than medical services in improving the interest and trust from the patients.

5. CONCLUSION

1. There is influence relationship between the quality of service and the patient's re-visit
2. There is no significant influence relationship between the patient's knowledge and the re-visit.
3. There is a significant influence relationship between the patient's behavior and the patient's re-visit.
4. Service Quality, knowledge and patient's behavior simultaneously affect the re-visit.
5. There is a significant influence relationship between service quality and patient's behavior.
6. There is no significant influence relationship between knowledge and behavior.
7. There is indirect influence of service quality to re-visits.
8. There is indirect influence of knowledge to re-visit.
9. Service quality and patient knowledge contribute simultaneously to the patient's behavior.

Recommendation

Puskesmas needed to program communication and education activities for visiting patients in order to improve knowledge and behavior change. Puskesmas needed to make improvement efforts in improving the quality of service through improving the performance of human resources (discipline, work ethic of health officers, empathy, and other soft skills), speed of service, tidiness of facilities and service areas, and various aspects that have a direct relationship with services at puskesmas.

Acknowledgements

The authors are very grateful to the participant who willing to help study. We also thank to the staff of the Puskesmas Situ Udik for their dedicated who help and assistance with participant recruitment.

Funding

This study was supported independently by the researchers. The Puskesmas Situ Udik has no role in the design of the study, collection, analysis and interpretation of data, or in writing the manuscript.

Availability of data and materials

The dataset analyzed during the current study is available from the corresponding author on reasonable request.

Authors' contribution

LAC and AN were central in designing the project and recruiting the participant and contributed in the statistical analyses. MF corrected the method research, the questionnaire, the figures and tables and revised the manuscript critically for important intellectual content. All authors read and approved the version to be published.

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Competing interest

The authors declare that they have no competing interests.

Ethics approval and consent to participate

The Ethics Committee of The Faculty of Medicine and Health University Muhammadiyah of Jakarta approved the study. All patients signed an informed consent.

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