Development of clinical forensic service quality questionnaire based on SERVQUAL

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Original Article

ABSTRACT

Background: Measuring service quality is an effort to assess and evaluate service performance. Currently, the measurement of clinical forensic service quality has never been done. There is no instrument for measuring service quality for clinical forensic patients.

Objectives: This study aims to collect valid evidence of a modified questionnaire to measure clinical forensic service quality.

Methods: This study protocol followed three phases from the World Health Organization guidelines on translating and adapting instruments for substance abuse. The study was conducted at Bhayangkara Hospital Pekanbaru, with ten respondents in phase pretesting and thirty in phase evaluation of the internal structure. The questionnaire developed was from the original version of SERVQUAL, consisting of 5 dimensions (reliability, responsiveness, assurance, empathy, and tangible) and 22 items with a five Likert scale. Content validity, response process, and internal structure are applied to collect valid evidence.

Results: A modified SERVQUAL questionnaire was obtained for clinical forensic patients with 22 items through an expert panel and respondent interview. The majority had high validity (item to total correlation coefficient r > 0.6). This final version showed excellent internal consistency (Cronbach alpha 0.956).

Conclusion: The final version of the modified SERVQUAL for clinical forensic service quality questionnaire has sufficient validity evidence for its content, response process, and some part of its internal structure, namely item to total correlation and reliability.

Latar belakang: Pengukuran kualitas layanan merupakan salah satu cara untuk menilai dan mengevaluasi kinerja pelayanan. Sejauh ini, pengukuran kualitas layanan forensik klinik belum pernah dilakukan. Belum terdapat instrument pengukuran kualitas layanan untuk forensik klinik.

Tujuan penelitian: : Penelitian ini bertujuan mendapatkan bukti validitas untuk mengukur kualitas layanan forensik klinik.

Metode: Protokol penelitian meenggunakan tiga fase dari World Health Organization guidelines on translating and adapting instruments for substance abuse*. Penelitian dilakukan di rumah sakit Bhayangkara Pekanbaru, masing-masing 10 responden pada fase* pretesting *dan 30 responden pada fase evaluasi struktur internal. Kuesioner yang dikembangkan adalah SERVQUAL versi asli yang terdiri dari 5 dimensi (keandalan, ketanggapan, kepastian, empati, dan bukti fisik) dan 22 item dengan Likert 5 skala. Validitas isi, proses respon, dan struktur internal diterapkan untuk mendapatkan bukti validitas.*

Hasil: Didapatkan Kuesioner modifikasi SERVQUAL untuk kualitas layanan forensik klinik dengan 22 item

melalui panel ahli dan proses respon. Mayoritas memiliki validitas yang tinggi (koefisien item to total correlation *r > 0,6). Versi final ini mendapatkan konsistensi internal yang sangat baik (*Cronbach alpha *0,956).*

Kesimpulan: *Kuesioner modifikasi SERVQUAL untuk kualitas layanan forensik klinik versi final ini memiliki bukti validitas yang sesuai pada validitas isi, proses respon, dan internal struktur.*

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INTRODUCTION

Good service quality is the expectation of every healthcare customer. Thus, all health workers are responsible for providing quality services for the community. Measuring service quality is an effort to assess and evaluate is an attempt to evaluate and measure the quality of hospital services. Patient satisfaction is influenced by patients's perceptions of the services they have received.[1,2] Patients will feel satisfied if the obtained perception exceeds expectations. Patient satisfaction caused by health services illustrates the quality of health services in hospitals. Measuring the level of satisfaction can be a valuable input for healthcare facilities to improve service quality.[1,2]

The relationship between service quality and patient satisfaction has been widely studied in Indonesia and abroad. Research shows a significant relationship between the quality of health services and patient satisfaction. For example, research conducted in 6 countries in Europe concluded that accessibility, quality of service, and improvement of health services by the government are factors that can increase patient satisfaction with health services.[3] In Indonesia, research on patient satisfaction has also been widely carried out and provides results that align with studies abroad. For example, a study of satisfaction of hospital patients in 7 provinces in Indonesia shows that all aspects of service quality, namely reliability, responsiveness, assurance, assurance, and tangible, influenced patient satisfaction.[4] The results of these studies prove that measuring the satisfaction is essential thing to be able to evaluate and assess service quality so that

quality can be maintained.

Clinical forensic services should be available in hospitals. Regulation of the Minister of Health of the Republic of Indonesia Number 3 of 2020 concerning Hospital Classification and Licensing, classifies clinical forensic services into other medical specialist services.[5] It can provide services to various hospital classifications. This service is related to the doctor's obligation to aid the police in the context of law enforcement and justice. The final product of clinical forensic services is visum et repertum. Patients who come to clinical forensics are generally victims of violence simultaneously. Apart from acting as patients who need treatment, they are also victims of violence who will be examined.[6,7]

A standard and valid instrument need to measure service quality. Therefore, valid and reliable data about service quality will obtain. In addition, the measured dimensions need to be built based on constructs that describe service quality in clinical forensic services. Continuous and in-depth measurements are expected to be able to measure the level of service quality more precisely, and the results can be used to improve patients satisfaction.[8,9]

Service quality measurement tools have been developed and widely used. Several service quality instruments have been developed and used in developed and developing countries. Several instruments measure overall service quality with hospital services, and others assess patient satisfaction for specific service units.[10] SERVQUAL and Quality of Care from The Patients's Perspective (QCPP) are the most widely used measuring tools. In practice, SERVQUAL will be customized and modified depending on the service and patient to be measured. However, the principles of service dimensions that exist in SERVQUAL are not changed.[11,12] Therefore, the development of the questionnaire in this study will be based on SERVQUAL.

Measuring the level of service quality, patients satisfaction, or other surveys to get input from clinical forensic patients has never been done. From the literature search results,

none of the publications in Indonesia related to measuring satisfaction and quality of clinical forensic services. International literature is also minimal. Instruments for measuring service quality clinical forensic do not yet exist in Indonesia. This study aims to collect valid evidence of a modified questionnaire to measure service quality clinical forensic. The research output can be leveraged to pay more attention to the satisfaction and quality of clinical forensic services therefore that the culture of improving the quality of services is sustainable.

METHODS
Study instrument
The original SERVQUAL version consists

of 22 indicators, divided into five dimensions: reliability, responsiveness, assurance, empathy, and tangible.[13] The previous instrument was modified for indicator, items, and measurement scale.[14] The measurement scale was modified from the original version, from a 7-point Likert scale to a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Written permission to modify was obtained from the developer of the original version.

Study process
This study protocol follows 3 phases from the World Health Organization guidelines on translating and adapting instruments for substance abuse.[15] (Figure 2) Based on the validity framework recommendation of AERA-

SERVQUAL Battery

Reliability
1. Providing services as promised.
2. Dependability in handling customers' service problems.
3. Performing services right the first time.
4. Providing services at the promised time.
5. Maintaining error-free records.

Responsiveness
6. Keeping customers informed about when services will be performed.
7. Prompt service to customers.
8. Willingness to help customers
9. Readiness to respond to customers' requests.

Assurance
10. Employees who instill confidence in customers.
11. Making customers feel safe in their transactions.
12. Employees who are consistently courteous.
13. Employees who have the knowledge to answer customer questions.

Empathy
14. Giving customers individual attention.
15. Employees who deal with customers in a caring fashion.
16. Having the customer's best interest at heart.
17. Employees who understand the needs of their customers.
18. Convenient business hours.

Tangibles
19. Modern equipment.
20. Visually appealing facilities.
21. Employees who have a neat, professional appearance.
22. Visually appealing materials associated with the service.

Figure 1. The original version SERVQUAL@ by Parasuraman et al. (1994) *@Reprinted from Journal of Retailing, Vol 2 number 2, A. Parasuraman, Valerie A. Zeithaml, and Leonard L. Berry, Alternative scales for measuring service quality: a comparative assessment based on psychometric and diagnostic criteria, Pages No. 207, Copyright (1994), with permission from Elsevier.*

APA (1999), the validity evidence in this study is supported by content, response process, and internal structure.[16,17]

Item generation

First, the authors studied the literature on the concept of SERVQUAL and the measurement of service quality. Next, contextualization according to the perspective of forensic medicine was carried out on each indicator of SERVQUAL through a literature review. Items are generated for each indicator based on the clinical forensic service setting in the hospital. Based on the dimensions of SERVQUAL, each indicator has five items for reliability, four for responsiveness, four for assurance; five for empathy; and four for tangibles. The paper-

based questionnaire was developed in two different layouts based on the font (typeface) used. The first layout uses font Arial 12; the second layout uses font Century 12 for headings/subheadings and font Georgia 12 for content. In phase 2, respondents are asked to choose a layout they think is comfortable to read. The most selected layout will be used as the final version layout.

Validity process

It is done through an expert panel to assess whether the questionnaire contents are accurate. Four experts consist of experts in the fields of marketing management, communications, forensic medicine, and hospital management that are relevant to this research. Through
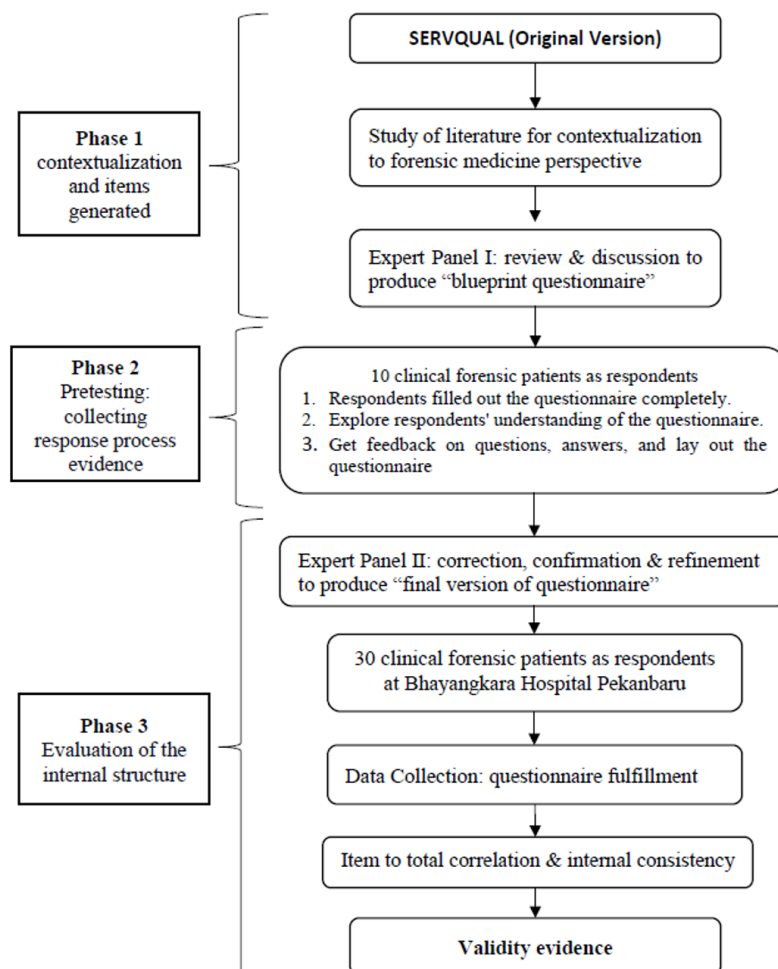

Figure 2. The modified questionnaire study process

Focus Group Discussions (FGD), each expert is asked to evaluate and review each item related to relevance with dimensions, clarity, and comprehensiveness.[18-20] Qualitative assessments were conducted and discussed until each item reached a consensus.[18] At the end of the FGD, there was a consensus for 22 items as the blueprint of the questionnaire.

In phase 2, the blueprint of the questionnaire was pretested to collect the response process through the interview method (Figure 2).[21] Ten respondents filled out the questionnaire completely and were interviewed. They have provided feedback regarding layout readability, instructions clarity, and difficulties in understanding item descriptions and answers. Based on this input, a rephrase is made on the items needing improvement to understand and accept the items better. In the next step, we have invited the expert panel for the second round of FGD. The corrected questionnaires were reevaluated and reviewed related to relevance with dimensions, clarity, and comprehensiveness. Several corrections, confirmations & refinements were carried out(Figure 2).

In phase 3, we have evaluated the internal structure using the item to total correlation and internal consistency methods.[16, 17, 22, 23] The data used is data from 30 respondents. The item to total correlation coefficient (r) is acceptable if greater than the r-table. The value of r-table for 10 respondents is 0.631 (r-table; df=8; sig. 0.05) and for 30 respondents is 0.361 ((r-table; df=28; sig. 0.05). Cronbach's alpha calculated for internal consistency with Cronbach's alpha coefficient equal to or greater than 0.70 is considered reliable.[17,22,24] Statistical software is used to perform statistical analysis.

Study population and setting

The study population was all patients who came and registered as clinical forensic patients at the Emergency Unit (ER) Bhayangkara Hospital Pekanbaru, with inclusion criteria: patients who were victims of violence with a maximum degree of moderate injury, adult patients aged > 18 years, and patients in a state of conscious, able to read and write. The sampling technique that will be used in this research is non-probability sampling with a purposive sampling approach. Paper-based questionnaires were tested on ten respondents in phase 2 and thirty respondents in phase 3.[15,25] This research protocol has approved ethical clearance from the Medicine and Health Research Ethics Unit, Faculty of Medicine, Universitas Riau with the decision number B/034/UN19.5.1.1/UEPKK/2022.

In phase 2, 10 respondents filled out the questionnaire completely. The mean age was 29.2 (SD 9.4) years, with more than half male gender (60%). Based on education level, 40% had undergraduate. None of the respondents has a history of being a clinical forensic patient. All respondents filled out the questionnaire entirely in phase 3. More than half of the respondents were male (53.3%), with the mean age of the respondents being 31.5 (SD 9.8) years. All respondents have never been clinical forensic patients, with the highest level of education being senior high school (76.7%).

RESULTS
Item generation

The results of the literature study to obtain indicators from the forensic medicine perspective can be seen in Table 1. The five dimensions of SERVQUAL are still used and form the basis for developing and modifying the study questionnaire.

Validity process
Expert panel review and response process

The final version of the item was obtained after a review process and consensus by an expert panel (phase 1), feedback from pretesting respondents, corrections, and refinement by an expert panel (phase 2). At the end of phase 2, the final version of the modified SERVQUAL questionnaire for clinical forensics was obtained (Table 1). The final version consists of 5 dimensions (reliability, responsiveness, assurance, and empathy, and tangible) with 22 items.

Table 1. Contextualization and items final version based on SERVQUAL

Dimension and Items	Forensic Medicine Perspective[26-32]	Items Final version*
Reliability (R)		
R1	Provide services as promised, namely forensic medical services	Skilled healthcare workers in conducting forensic examinations.
R2	Reliability in handling forensic patient care problems	Healthcare workers ask for complaints in depth.
R3	Doing the service right the first time	The identity check procedure is carried out carefully.
R4	Delivering service at the promised time, meaning at the same time	The forensic examination process is carried out immediately.
R5	Record the wound carefully and thoroughly	Healthcare workers examine wounds/trauma accurately.
Responsiveness (Rs)		
Rs1	Provide good and complete information, especially about medicolegal procedures, and forensic examinations	Health workers provide information about forensic examination procedures clearly.
Rs2	Fast service to patients by not delaying the examination because time can change the appearance of the wound	Healthcare workers are wide awake to carry out forensic examinations.
Rs3	Willingness to assist the patient in terms of the purpose of the forensic examination	Healthcare workers are willing to help in the forensic examination process.
Rs4	Readiness to respond to customer requests	Health workers are ready to respond to complaints /problems/questions.
Assurance (A)		
A1	Employees who instill confidence in patients that the patient is in the right person	Healthcare workers introduce themselves before starting the examination.
A2	Make the patient feel safe and comfortable during the forensic examination	Healthcare workers provide a sense of comfort when the examination is carried out.
A3	Courtesy and respect in conducting forensic examinations	Healthcare workers show respect during forensic examinations.
A4	knowledgeable employees to answer patient questions, experienced in conducting forensic examinations	Experienced healthcare workers in handling forensic patients.
Empathy (E)		
E1	Provide individualized attention to patients based on the problems of violence they face	Healthcare workers pay special attention to patients based on their cases.
E2	Attention to patient complaints	Healthcare workers listen carefully to complaints/chronology/events.
E3	Have the best interest to help the patient's problems	Healthcare workers serve with all their hearts.
E4	Understanding the needs of clinical forensic patients	Healthcare workers understand the patient's needs.
E5	Comfortable working hours, forensic examinations are carried out 24 hours so that patients can come anytime	Healthcare workers are always available when needed.

Dimension and Items	Forensic Medicine Perspective[26-32]	Items Final version*
Tangible (T)		
T1	From a forensic perspective, it doesn't have to be new or up to date; the most important thing is the condition of the examination room, which is neat and clean	The condition of the examination room looks clean.
T2	A visually appealing facility is the presence of a space that maintains privacy	The examination room maintains privacy.
T3	Neat and polite employees	The appearance of healthcare workers looks neat.
T4	Visually appealing materials related to services are wound documentation and measurement activities	Forensic examination equipment looks clean.

*Original version in Bahasa Indonesia.

Table 2. Result analysis descriptive, internal consistency, and item to total correlation

Dimension	Skewness		Mean (SD)		Internal consistency		Item	Item to total correlation	
	Phase 2	Phase 3	Phase 2	Phase 3	Phase 2	Phase 3		Phase 2	Phase 3
Reliability (R)	-1.051	-1.025	22.9(2.8)	23.2(2.1)	0.925	0.823	R1	0.992**	0.797**
							R2	0.956**	0.715**
							R3	0.947**	0.781**
							R4	0.640*	0.597**
							R5	0.794**	0.716**
Responsiveness (Rs)	-0.936	-1.156	18.3(2.1)	18.6(1.7)	0.884	0.781	Rs1	0.913**	0.704**
							Rs2	0.640*	0.590**
							Rs3	0.947**	0.827**
							Rs4	0.801**	0.698**
Assurance (A)	-1.827	-1.977	18.2(3.0)	18.5(2.1)	0.944	0.816	A1	0.956**	0.725**
							A2	0.890**	0.701**
							A3	0.838**	0.746**
							A4	0.992**	0.793**
Empathy (E)	-1.996	-1.754	23.2(3.7)	23.8(2.2)	0.987	0.893	E1	0.992**	0.821**
							E2	0.875**	0.810**
							E3	0.992**	0.821**
							E4	0.875**	0.760**
							E5	0.992**	0.799**
Tangible (T)	-1.037	-1.651	17.7(2.4)	18.4(1.7)	0.868	0.735	T1	0.633*	0.575**
							T2	0.887**	0.790**
							T3	0.947**	0.557**
							T4	0.992**	0.767**
Overall	-1.393	-1.814	100.3(13.3)	102.5(8.9)	0.985	0.956			

* Significant at the level 0.01, ** Significant at the level 0.05

Ten respondents provided feedback and suggestions for improving the questionnaire. In pretesting, almost all respondents (80%) stated that the second layout questionnaire was more comfortable to read than the first. After response process, the description of A2 "Health care workers provide a sense of comfort and safe when the examination is carried out" was changed to "Health care workers provide a sense of comfort when the examination is carried out" and T1 "The condition of the examination room looks comfortable and clean" was changed to "The condition of the examination room looks clean".

Evaluation of the internal structure

Table 2 showed all items were valid in the final version of the modified SERVQUAL questionnaire, where all items had an item-to-total correlation coefficient (r) value greater than the r-table. Most items had a high level of validity (r > 0.6). The reliability test showed that this questionnaire is reliable with an excellent Cronbach's alpha value (0.956). The five measurement dimensions also showed excellent internal consistency values in both phase 2 and phase 3. Skewness analysis shows that each dimension has a normal data distribution (absolute value <2).[33]

DISCUSSION

Our modified questionnaire is based on the original SERVQUAL questionnaire from Parasuraman et al.[13,14,34] SERVQUAL is the most widely used and modified measurement instrument to assess service quality. The reason is that SERVQUAL is simple, operable, and represents most service quality dimensions to be measured.[30,32,35] Our final version of the questionnaire was designed as a paper-based questionnaire with 22 items. It is in accordance with the theory that most self-administered questionnaires have a maximum of 25 items.[36] The font type most respondents chose was Century 12 for headings/subheadings and Georgia 12 for the questionnaire contents. This is in line with the theory that layout plays a vital role in increasing the response rate of respondents to fill out. This type of font is chosen because the serif and sans serif fonts are more readable than other types of fonts.[36,37]

According to AERA-APA (1999) recommendation, the current validity framework is suggested, with validity defined as the degree to which the evidence and theories supporting the interpretation of assessment results fit with the tool's underlying concept.[16,17] Validity evidence in this approach includes content evidence, response process, internal structure, correlation with other variables, and consequence.[16, 17, 38]

Our study carried out a content dan response process in phases 1 and 2. Four experts review and discuss each candidate item. The results of the expert panel consensus through FGD produced a blueprint of the questionnaire. In this study, content validity was obtained through a qualitative approach method through FGD. A similar procedure was used in the study conducted in Indonesia by Oktavia et al. to convey the content validity of the K-13 STEM questionnaire.[39] For testing content validity, an investigation can use a qualitative approach, or quantitative approach, or a combination of both. The qualitative approach commonly used is in-depth interviews or FGDs with experts or respondents.[18-20] The number of experts who need to be involved in the content validity assessment is still a question, but some literature suggests at least three experts.[18,20]

Pretesting on ten respondents obtained several minor improvements. These results are then corrected and refined in the second-round expert panel; therefore, the items are unambiguous, have a word count of less than 20, and eliminate items with double-barreled questions.[15,36,40] The assessment response process in order to obtain validity evidence is an essential step for the clarity of the instructions and the language used in the description and answers of an instrument. Our study used an interview approach to obtain valid evidence from the response process. The study conducted

by Lu et al. also used interviews to assess the response process.[33] Other methods that can be used are response time, eye-tracking movement, and cognitive interviewing.[21]

Based on the item to total correlation coefficient (r), the results showed that all items on each assessment instrument phase were valid as a measuring tool. Another important finding is that almost all items have high item-total correlation values. However, four items have r below 0.6, namely items T1, T3, R4, and Rs2. The results are still valid because the item to total correlation coefficient (r) is still greater than the r-table (0.361).[10,22] This finding is probably due to differences in respondents' perceptions of the items and their first-time experience of being a clinical forensic patient.

A measurement is reliable if it can show the same or almost identical results if the examination is carried out repeatedly.[22] Reliability can be carried out by calculating Cronbach's alpha value. The results showed that the instrument was reliable with Cronbach's alpha 0.956. Cronbach's alpha value of all items in each dimension has a value > 0.6, which means that all statements are considered reliable.[10,22] The lowest Cronbach's Alpha value is in the tangible dimension (T), 0.735. Although it is reliable, it can improve by increasing the number of respondents. Improving the measurement scale and data collection methods accompanied by observations.[10,22] Our study did not perform the Test-Retest reliability method due to this new instrument.[22] There has never been a similar instrument in this study. Item to total correlation coefficient (r) and Cronbach's alpha is the method used in this study to assess the internal structure. Luo et al. also used a similar approach but added it with the factor analysis method.[33] Cook & Beckman suggest reliability and factor analysis in obtaining validity evidence on the internal structure.[17]

Our study is a pilot developing a SERVQUAL-based questionnaire for clinical forensic service. The setting of clinical forensic services is different from other medical services. Therefore, examining documents, identities, forensic examination procedures, and examination purposes for medicolegal purposes is a challenge in making the right instrument for clinical forensic patients. However, our study was incomplete because it only applied three of five sources of validity evidence. Therefore, we recommended applying other sources of validity evidence, such as collecting other validity evidence (further internal structure evidence by analyzing the factor), correlation with other variables, and consequences.

The limitation of this study is the time of taking the questionnaire immediately after the patient underwent a clinical forensic examination. In addition, clinical forensic patients are unique because they are also victims of violence apart from being patients. Thus, psychological factors will affect the process of filling out the questionnaire and the patient's interpretation of the items. Therefore, it recommends conducting a study with qualitative methods and assessing the influence of psychological factors on patient perceptions of the items asked. Another limitation in our study is the limited number of respondents in phase 3; However, the number used in this study is still acceptable; adding the number of respondents will further increase the validity of the internal structure assessment and reduce bias.[25]

CONCLUSION

The final version of the modified SERVQUAL questionnaire has sufficient validity evidence. The development of this instrument shows that it has validity evidence for its content, response process, and some part of its internal structure, namely item to total correlation and reliability.

CONFLICT OF INTEREST

The author(s) declared no potential conflicts of interest concerning this article's research, authorship, and publication.

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