

Analysis of factors influencing the effectiveness of National Health Insurance (NHI) services at the regional general hospital of Konawe Kepulauan Regency, Southeast Sulawesi Province, Indonesia

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Abstract

Background: The implementation of the National Health Insurance (NHI) program in Indonesia has significantly expanded healthcare access; however, high coverage does not automatically ensure effective hospital services, particularly in remote and archipelagic regions with limited resources. Internal organizational factors such as work motivation, work ability, work atmosphere, work environment, and the availability of equipment and facilities are considered essential determinants of service effectiveness.

Objective: This study aimed to analyze the factors influencing the effectiveness of NHI services at Konawe Islands Regency General Hospital, Southeast Sulawesi, Indonesia.

Methods: A quantitative observational study with a cross-sectional design was conducted among 206 hospital staff involved in NHI services, with 136 respondents selected using stratified random sampling based on the Slovin formula. Data were collected using validated Likert-scale questionnaires. Statistical analyses included univariate analysis, chi-square tests for bivariate analysis, and multivariate logistic regression to determine dominant influencing factors.

Results: Bivariate analysis revealed that work motivation, work ability, work atmosphere, work environment, and work equipment and facilities were significantly associated with the effectiveness of NHI services ($p < 0.05$). Multivariate logistic regression showed that work motivation (OR = 5.617), work ability (OR = 3.487), work atmosphere (OR = 3.466), and work equipment and facilities (OR = 4.010) significantly influenced service effectiveness, while the work environment was not statistically significant after adjustment ($p = 0.732$). Work motivation emerged as the most dominant factor.

Conclusion: Improving NHI service effectiveness in archipelagic hospitals requires strengthening health workers' motivation and competencies, fostering a conducive work atmosphere, and ensuring adequate equipment and facilities. These findings provide evidence-based recommendations for hospital management and policymakers to enhance healthcare service delivery in geographically isolated regions.

Keywords: National Health Insurance; Service Effectiveness; Work Motivation; Work Ability; Work Facilities; Work Atmosphere; Hospital Management

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1. Introduction

The implementation of National Health Insurance (NHI) since 2014 has brought a fundamental transformation in the financing system and the implementation of health services in Indonesia. Through the social insurance scheme managed by the Health Social Security Administration Agency (BPJS), NHI is designed to ensure that all residents have access to quality health services without financial barriers, with the ultimate goal of achieving Universal Health Coverage (UHC). This program includes a comprehensive benefit package that includes promotive, preventive, curative, and rehabilitative services, so that it is expected to be able to improve the degree of public health evenly and fairly.

The development of NHI membership coverage shows a very significant increasing trend. As of 2019, this program has reached more than 84% of Indonesia's population (1). This increase continues, even in August 2024 the coverage of membership reached 98.19% and increased to 98.3% in 2025, which means that almost the entire Indonesian population has been registered as NHI participants (2). This achievement shows the government's success in expanding access to health insurance ownership. However, the high coverage of membership does not automatically guarantee the quality and effectiveness of health services received by the community, especially in advanced health facilities such as hospitals.

Hospitals play a strategic role in the NHI system because they are the main referral centers and absorb the largest portion of financing in the INA-CBGs scheme. Therefore, the effectiveness of hospital services greatly determines the success of the overall implementation of NHI. The effectiveness of health services reflects the ability of hospitals to provide services that are timely, safe, quality, and in accordance with standards to all participants. The health literature shows that the effectiveness of services is influenced by the speed of the service process, the accuracy of medical diagnosis and action, the interpersonal relationship of health workers with patients, the availability of infrastructure, and coordination between service units (3). However, various empirical studies report that there are still serious problems in the implementation of NHI in hospitals, such as long queues, waiting times that exceed standards, high workloads of health workers, and limited medical facilities and equipment (4–6).

The problem of service effectiveness does not only come from technical and administrative aspects, but is also greatly influenced by internal organizational factors. Factors such as work motivation, work ability, work atmosphere, work environment, and the adequacy of supporting facilities and equipment have a major contribution to the performance of health workers and the quality of services provided. However, these internal aspects often receive less attention in research and policy, which focus more on patient perception, technical quality of service, and financing aspects and INA-CBGs claims. In fact, the effectiveness of health services is highly dependent on the capacity and working conditions of human resources who run these services.

In this context, the theory of work effectiveness put forward by Gie (1991) becomes relevant to be used as an analytical framework. This theory states that work effectiveness is influenced by five main factors, namely work motivation, work ability, work atmosphere, work environment, and work equipment and facilities. Recent research shows that these five factors remain highly relevant in the context of modern healthcare. Work motivation has been proven to have a significant effect on the performance and quality of health workers' services (7,8), work ability contributes greatly to the accuracy and speed of service the atmosphere and work environment affect the productivity and responsiveness of officers while the adequacy of work facilities and equipment determines the smooth running of clinical and administrative service processes (9,10)

The urgency of this study is further strengthened when placed in the context of remote areas and islands. Konawe Islands Regency Hospital is the only regional general hospital on Wawonii Island, an archipelago that has limited geographical access, transportation, and health resources. The profile of the Konawe Islands Hospital (2023) shows that there are limitations in health workers, especially non-resident specialist doctors, limited supporting facilities such as blood banks and diagnostic tools, high workload due to the function of hospitals as the only referrals on the island, and limited information systems and referral transportation facilities. This condition makes the Konawe Islands Hospital face complex challenges in maintaining the effectiveness of NHI services.(11)

Until now, research on the effectiveness of NHI services in hospitals in remote and geographically isolated areas is still very limited, especially those that comprehensively examine the role of internal managerial factors. Most studies focused on patient satisfaction, technical quality of service, or financing aspects, while quantitative studies that analyzed the influence of work motivation, work ability, work atmosphere, work environment, and facilities and equipment on the effectiveness of NHI services were rare. Therefore, this study aims to comprehensively analyze the influence of these five internal factors on the effectiveness of NHI services at the Konawe Islands Regency Hospital. The results of the

research are expected to be a scientific basis for improving hospital management, strengthening NHI implementation, and improving the quality and access to public health services in the archipelago.

2. Research methods

This study uses an observational quantitative design with a cross-sectional approach, which aims to analyze the influence of work motivation, work ability, work atmosphere, work environment, and work equipment and facilities on the effectiveness of national health insurance (NHI) services at the Konawe Islands Regency Hospital. The total population of all hospital staff who are directly or indirectly involved in NHI services is 206 people. The number of samples was determined using the slovin formula with an error rate of 5%, so that 136 respondents were obtained, which were taken using stratified random sampling techniques proportionally based on job categories and work units. Data collection was carried out using a Likert scale questionnaire that has been tested for validity and reliability, with direct and online filling methods.

Data analysis was carried out in stages including univariate, bivariate and multivariate analysis. Univariate analysis was used to describe the characteristics of respondents and the distribution of research variables, while bivariate analysis used the Chi-Square test to test the relationship between each independent variable and the effectiveness of NHI services at a significance level of 5% ($\alpha = 0.05$). Variables that met the criteria were then analyzed using multiple regression logistics to determine the simultaneous influence and determine the dominant factors that affect the effectiveness of NHI services.

3. Results

The Relationship between Work Motivation and the Effectiveness of NHI Services

Table 1 The Relationship between Work Motivation Variables and the Effectiveness of NHI Services at Konawe Islands Regency Hospitals in 2025

Work Motivation	Effectiveness of NHI Services						<i>P-value</i>
	Less		Enough		Quantity		
	n	%	n	%	n	%	
Less	22	53.66	19	46.34	41	100	0.001*
Enough	11	11.58	84	88.42	95	100	
Total	33	24.26	103	75.74	136	100	

Source: Primary data, 2025

Based on Table 20, it is known that 41 respondents (100%) with poor work motivation mostly have the effectiveness of NHI services which are also in the poor category, namely 22 people (53.66%) Meanwhile, in 95 respondents (100%) with sufficient work motivation, the majority have the effectiveness of NHI services in the sufficient category, namely 84 people (88.42)

The results of the *chi-square* test showed a p-value of 0.001, which means that there is a statistically significant relationship between work motivation and the effectiveness of NHI services ($p\text{-value} < 0.05$). This finding indicates that the better the work motivation of health workers and support staff, the higher the effectiveness of the NHI services provided.

3.1. The Relationship between Employability and the Effectiveness of NHI Services

The results of the analysis in Table 21 show that respondents with the less likely category of work ability tend to have less NHI service effectiveness, namely 18 people (64.29%). On the other hand, respondents with sufficient work ability category mostly had the effectiveness of NHI services in the sufficient category, namely 93 people (86.11%).

A p-value of 0.001 indicates a significant relationship between employability and the effectiveness of NHI services ($p\text{-value} < 0.05$). This shows that adequate work ability plays an important role in supporting the achievement of effective NHI services.

Table 2 The Relationship of Work Ability Variables with the Effectiveness of NHI Services at Konawe Islands Regency Hospitals in 2025

Workability	Effectiveness of NHI Services						<i>P-value</i>
	Less		Enough		Quantity		
	n	%	n	%	n	%	
Less	18	64.29	10	35.71	28	100	0.001*
Enough	15	13.89	93	86.11	108	100	
Total	33	24.26	103	75.74	136	100	

Source: Primary data, 2025

3.2. The Relationship between Work Atmosphere and the Effectiveness of NHI Services

Table 3 The Relationship between Work Atmosphere Variables and the Effectiveness of NHI Services at Konawe Islands Regency Hospitals in 2025

Working Atmosphere	Effectiveness of NHI Services						<i>P-value</i>
	Less		Enough		Quantity		
	n	%	n	%	n	%	
Less	17	51.52	16	48.48	33	100	0.001*
Enough	16	15.53	87	84.47	103	100	
Total	33	24.26	103	75.74	136	100	

Source: Primary data, 2025

Based on Table 3, it is known that of the 33 respondents (100%) who assessed the working atmosphere of the poor category as having a proportion of the effectiveness of NHI services in the less category as many as 17 people (51.52%). Meanwhile, 103 respondents (100%) with a work atmosphere in the sufficient category mostly had the effectiveness of NHI services in the sufficient category, namely 87 people (84.47%).

The results of the *chi-square test* showed a p-value of 0.001, which means that there is a meaningful relationship between the working atmosphere and the effectiveness of NHI services (p-value < 0.05). This shows that a conducive work atmosphere can support the increase in the effectiveness of NHI services in hospitals.

3.3. The Relationship between Work Environment Variables and the Effectiveness of NHI Services

Table 4 The Variable Relationship of Work Environment with the Effectiveness of NHI Services at Konawe Islands Regency Hospitals in 2025

Work Environment	Effectiveness of NHI Services						P-value
	Less		Enough		Quantity		
	n	%	n	%	n	%	
Less	12	46.15	14	53.85	26	100	0.001*
Enough	21	19.09	89	80.91	110	100	
Total	33	24.26	103	75.74	136	100	

Source: Primary data, 2025

The results of the analysis in table 4, from 26 respondents (100%) show that respondents who assessed the work environment as low as likely to have the effectiveness of NHI services in the low category, namely 12 people (46.15%). On the other hand, of the 110 respondents (100%) who assessed the work environment as sufficient, the majority had the effectiveness of NHI services in the sufficient category, namely 89 people (80.91%).

A p-value of 0.004 indicates that there is a statistically significant relationship between the work environment and the effectiveness of NHI services (p-value < 0.05). These findings indicate that a supportive work environment plays a role in improving the quality and effectiveness of NHI services.

3.4. The Relationship between Work Equipment and Facilities with the Effectiveness of NHI Services

Table 5 The Relationship between Work Equipment and Facility Variables and the Effectiveness of NHI Services at Konawe Islands Regency Hospitals in 2025

Work Equipment and Facilities	Effectiveness of NHI Services						<i>P-value</i>
	Less		Enough		Quantity		
	n	%	n	%	n	%	
Less	23	41.82	32	58.18	55	100	0.001*
Enough	10	12.35	71	87.65	81	100	
Total	33	24.26	103	75.74	136	100	

Source: Primary data, 2025

Based on table 5, of the 55 respondents (100%) who assessed that the equipment and work facilities in the category lacked the effectiveness of NHI services in the category lacked, 23 people (41.82%). Meanwhile, of the 81 respondents (100%) who assessed the equipment and work facilities in the sufficient category, most of them had the effectiveness of NHI services in the sufficient category, namely 71 people (87.65%).

The results of the *chi-square* test showed a p-value of 0.001, which means that there is a statistically significant relationship between equipment and work facilities and the effectiveness of NHI services. This shows that the availability of adequate facilities and work equipment is very important in supporting the effective implementation of NHI services.

Based on the table of analysis results with the *Chi-square test* above, it was obtained that all independent variables, namely work motivation (p-value=0.(p. 101), work ability (p-value=0.001), work atmosphere (p-value=0.001), work environment (p-value=0.004), and work equipment and facilities (p-value=0.001) have a meaningful relationship with the effectiveness of NHI services at the Konawe Islands Regency Hospital with all independent variables having a p-value of 0.05.

3.5. Logistic Regression analysis results

Table 6 Results of Multivariate Analysis of Logistic Regression Factors Affecting the Effectiveness of NHI Services at Konawe Islands Regency Hospitals in 2025

Models		B	S.E.	Wald	df	P-value	Exp(B)/OR	95% C.I. for EXP(B)	
								Lower	Upper
Step 1a	Work Motivation	1.738	0.534	10.597	1	0.001	5.688	1.997	16.201
	Work Skills	1.268	0.587	4.669	1	0.031	3.554	1.125	11.226
	Working Atmosphere	1.345	0.636	4.474	1	0.034	3.840	1.104	13.356
	Work Environment	-0.237	0.694	0.117	1	0.732	0.789	0.202	3.074
	Work Equipment and Facilities	1.407	0.528	7.107	1	0.008	4.083	1.451	11.487
	Constant	-3.241	0.512	40.079	1	<0.001	0.039		
	Work Motivation	1.726	0.532	10.537	1	0.001	5.617	1.981	15.924

Step 2a	Work Skills	1.249	0.582	4.613	1	0.032	3.487	1.115	10.899
	Working Atmosphere	1.243	0.560	4.930	1	0.026	3.466	1.157	10.385
	Work Equipment and Facilities	1.389	0.525	7.012	1	0.008	4.010	1.435	11.211
	Constant	- 3.245	0.513	40.071	1	<0.001	0.039		

Source: Primary data, 2025

Based on the results of *the Wald test* in the final model (Step 2), it can be concluded that work motivation, work ability, work atmosphere, and work equipment and facilities partially have a significant effect on the effectiveness of NHI services. The *wald* value of 10,537 means that each work motivation unit will have an effect of 10,537 on the effectiveness of NHI services at the Konawe Islands Regency Hospital in 2025 compared to other variables.

Similarly, the strength of the Work Motivation variable is greater than other variables with the highest Exp(B) value or *odds ratio* value compared to other variables, which is 5,617, meaning that each work motivation unit will provide an influence of 5,617 on the effectiveness of NHI services at Konawe Islands Regency Hospital compared to other variables and has a greater chance of strength compared to other variables with a C.I for Exp (B) value between 1,981 - 15,924 meaning that each work motivation unit will provide an opportunity for influence between 1,981 - 15,924 on the effectiveness of NHI services at Konawe Islands Regency Hospital

4. Discussion

4.1. The Effect of Work Motivation on the Effectiveness of NHI Services

Work motivation is a psychological factor that plays an important role in determining the level of effort, perseverance, and commitment of health workers in providing services. The results showed that the majority of respondents had work motivation in the sufficient category (69.9%), and there was a significant influence of work motivation on the effectiveness of NHI services, with the highest Wald value (10.537), which indicates that work motivation is the dominant factor compared to other variables. These findings show that the higher the work motivation, the greater the chance of achieving effective NHI services.

In the context of the Konawe Islands Regency Hospital, work motivation has a strategic role considering the limited facilities, high workload, and geographical challenges of the archipelago. Health workers who have high motivation are still able to maintain the quality of service even in limited conditions. This is in line with Maslow's theory of needs and Herzberg's two-factor theory which asserts that the fulfillment of psychological needs, recognition, and work responsibilities can improve performance and effectiveness of services.

These findings are consistent with research which states that work motivation has a significant effect on the performance and quality of health services. Thus, increasing work motivation through incentives, awards, career development, and a supportive work environment is the main strategy in increasing the effectiveness of NHI services. (12,13)

4.2. The Effect of Work Ability on the Effectiveness of NHI Services

Work ability reflects the capacity of health workers to carry out tasks which include aspects of knowledge, skills, and work attitudes. The results showed that the majority of respondents had sufficient work skills (79.4%) and there was a significant influence of work skills on the effectiveness of NHI services. This finding confirms that technical and administrative competence are important factors in supporting the successful implementation of NHI services.

In a complex NHI system, health workers are required to have an understanding of service procedures, clinical skills, and good administrative skills so that services run quickly, precisely, and according to standards. Without adequate work skills, service effectiveness is difficult to achieve even though work motivation is high. This is in line with Gibson's theory which states that individual ability is one of the main determinants of performance, in addition to motivation and work environment.

The results of this study reinforce the findings show that the employability and competence of health workers have a significant effect on service quality and patient satisfaction. Therefore, improving competencies through continuous

training, technical coaching, and strengthening human resource capacity is a strategic step in increasing the effectiveness of NHI services (14,15)

4.3. The Effect of Work Atmosphere on the Effectiveness of NHI Services

The work atmosphere describes the psychological and social conditions in the work environment, including relationships between employees, communication with leaders, and work comfort. The results showed that most of the respondents assessed the working atmosphere in the category of adequate (75.7%) and there was a significant influence of the work atmosphere on the effectiveness of NHI services. These findings indicate that a conducive work atmosphere can improve work morale, team collaboration, and service quality.

At the Konawe Islands Regency Hospital, a positive work atmosphere is an important supporting factor in maintaining the effectiveness of NHI services, especially in the midst of limited resources and high workload. Harmonious working relationships and leadership support can minimize psychological distress and increase the concentration and empathy of health workers for patients.

These results are in line with the research which stated that the work atmosphere has a significant effect on the performance of health workers. Robbins and Judge (2017) also emphasized that a positive work climate increases job satisfaction and organizational commitment, thus having a direct impact on improving service performance. Therefore, strengthening internal communication, participatory leadership, and conflict management is an important strategy in increasing the effectiveness of NHI services (16)

4.4. The Influence of the Work Environment on the Effectiveness of NHI Services

The work environment includes physical and non-physical conditions such as cleanliness, lighting, security, and workspace layout. The results showed that most respondents rated the work environment in the category of adequate (80.9%). Although bivariate there is a significant relationship between the work environment and the effectiveness of NHI services, in the multivariate analysis of the work environment it does not show a significant influence.

These findings indicate that the influence of the work environment tends to be indirect and becomes less dominant when motivation, work ability, work atmosphere, and facilities are taken into account simultaneously. In the context of the Konawe Islands Regency Hospital, the relatively homogeneous working environment conditions cause the variability of its influence on service effectiveness to be low.

These results are in line with research which shows that the work environment is not a dominant factor in influencing the performance of health workers. Nevertheless, the work environment still has an important role as a supporting factor in creating comfort, work safety, and the quality of health services [(17)

4.5. The Effect of Work Equipment and Facilities on the Effectiveness of NHI Services

Work equipment and facilities are the main supporting facilities in health services, including medical equipment, service infrastructure, and information systems. The results showed that most of the respondents assessed work facilities in the category of adequate (59.6%), and there was a significant influence of work equipment and facilities on the effectiveness of NHI services.

In the context of island hospitals, limited facilities are a major challenge that has a direct impact on the speed, accuracy, and quality of service. The availability of adequate facilities makes it easier for health workers to provide services that meet standards and improve patient safety. These findings are in line with show that health facilities have a significant effect on the quality of service and patient satisfaction [18].

In addition, the Ministry of Health of the Republic of Indonesia emphasized that service facilities are one of the main indicators of the quality of health services. Therefore, the improvement and maintenance of health service facilities must be a priority for managerial policies of hospitals and local governments to increase the effectiveness of NHI services in a sustainable manner.

5. Conclusion

The results of the study showed that work motivation, work ability, work atmosphere, work environment, as well as work equipment and facilities were in the category of adequate, and the effectiveness of NHI services at the Konawe Islands Regency Hospital was also considered quite effective by the majority of respondents. Bivariate analysis showed

that all independent variables had a meaningful relationship with the effectiveness of NHI services ($p < 0.05$). Furthermore, multivariate analysis showed that work motivation, work ability, work atmosphere, and work equipment and facilities had a significant effect on the effectiveness of NHI services, with work motivation as the most dominant factor ($OR = 5.617$), while the work environment had no significant effect ($p = 0.732$). These findings confirm that increasing the motivation of health workers and supporting adequate work facilities are the main keys in increasing the effectiveness of NHI services, especially in the archipelago.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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