

Evaluation of Factors Affecting Motivation of Health Professionals Using Fuzzy Analytical Hierarchy Process Method¹

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Abstract

The aim of this study is to weight the factors affecting the motivation of health professionals according to the order of importance in line with the opinions of the participants and to rank these factors from the most important to the least important. The population of the research consists of health professionals working in a private hospital operating in Bandırma district of Balıkesir province, Turkey. Opinions of 62 health professionals were evaluated. The Fuzzy Analytical Hierarchy Process (FAHP) method was used to rank the motivation factors. It is seen that economic factors are the most important criteria on the motivation of health professionals than psychosocial and managerial and organizational factors. The sub-criterion with the highest priority among the economic factors criterion is "wage". When the psychosocial factors are evaluated, the criterion of "value and status" and "recognition" are important; among the managerial and organizational factors, the criterion of "fair and open management policy" was found to be more important on motivation. Based on these results it is suggested that in order to improve health professional motivation the wages can be improved and the further development of policy and practice that recognizes the value and status of the health professionals and fair and open management policy can be adopted.

Keywords: Fuzzy Analytical Hierarchy Process, Health Professionals, Motivation

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Sağlık Çalışanlarının Motivasyonuna Etki Eden Faktörlerin Bulanık Analitik Hiyerarşi Prosesi Yöntemi ile Değerlendirilmesi

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Öz

Bu çalışmanın amacı, sağlık çalışanlarının motivasyonuna etki eden faktörlerin katılımcıların görüşleri doğrultusunda önem derecesine göre ağırlıklandırılması ve bu faktörlerin en önemliden itibaren en önemsiz doğru sıralanmasıdır. Araştırmanın evrenini Balıkesir ilinin Bandırma ilçesinde faaliyet gösteren bir özel hastanede görev yapan sağlık çalışanları oluşturmaktadır. 62 sağlık çalışanın görüşleri değerlendirme kapsamına alınmıştır. Motivasyon faktörlerini sıralamak amacıyla Bulanık Analitik Hiyerarşi Prosesi (BAHP) yöntemi kullanılmıştır. Sağlık çalışanlarının motivasyonunda psikososyal, yönetsel ve örgütsel faktörlerden çok ekonomik faktörlerin en önemli faktör olduğu görülmektedir. Ekonomik faktörler arasında en yüksek önceliğe sahip alt kriter "ücret"tir. Psikososyal faktörler değerlendirildiğinde "değer ve statü" ile "tanınma" kriteri önemlidir; yönetsel ve örgütsel faktörlerden "adil ve açık yönetim politikası" kriteri motivasyon üzerinde daha önemli bulunmuştur. Bu sonuçlara dayanarak sağlık çalışanlarının motivasyonunu artırmak amacıyla ücretlerin iyileştirilebileceği ve sağlık çalışanlarının değerini ve statüsünü tanıyan politika ve uygulamaların daha da geliştirilmesi ile adil ve açık yönetim politikasının benimsenebileceği önerilmektedir.

Anahtar Kelimeler: Bulanık Analitik Hiyerarşi Prosesi, Sağlık Çalışanları, Motivasyon

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Introduction

Motivation is the “willingness to exert high levels of effort toward organizational goals, conditioned by the effort’s ability to satisfy some individual need.” (Robbins, 1993). Motivation is fundamentally meant to facilitate behavioral alteration. It is a force that enables an individual to act in the direction of a particular objective (Shahzadi Javed, Pirzada, Nasreen and Khanam, 2014).

People have many needs and each person has a different mixture and strength of needs, as some people are driven by achievement while others are focusing on security. If the employees are not satisfied with their jobs and not motivated to fulfill their tasks and achieve their goals, the organization cannot attain success. Therefore, it is essential for a manager to understand, predict what really motivates employees (Dobre, 2013).

When the World Health Organization (WHO) declared the spread of the severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2) a global pandemic on March 11, 2020, there were approximately 147,000 confirmed cases worldwide and the pandemic put many health systems under great stress. Although healthcare systems are often conceived in terms of the physical hospital beds and medical equipment, the system’s most fundamental, valuable, and vulnerable assets are, the manpower resources; medical doctors, nurses, physiotherapists, technicians, and many other professionals. The sudden reorganization of work practices and the emotional impact of the large number of the patients had many consequences on the well-being of the healthcare professionals. Like the rest of the population health professionals also faced social distancing, school and day care closures, the economic concerns, and general uncertainty about the future (Fukuti, Uchôa and Mazzoco, 2020; De Leo, Cianci, Mastore and Gozzoli, 2021).

The health workforce is one of the important elements of reaching organizational goals, developments and achievements. Employees' full and proactive use of their qualifications, talents and skills in achieving the goals of the organization depends on their motivation. Employee motivation is defined as the willingness to exert a high level of effort towards organizational goals, conditioned by the ability of employees to meet some of their individual needs (Afolabi, Fernando and Bottiglieri, 2018; Franco, Bennett and Kanfer, 2002). Motivating also encourages employees to know their needs, goals, duties and values, to persuade them to undertake certain activities, to exert intellectual and physical effort, and to use their skills and abilities to achieve the goals of the organization (Adamus, 2009; Baljoon, Banjar and Banakhar, 2018). Health professionals are the most important resource of health institutions, therefore understanding their motivation is necessary for the effectiveness, efficacy and quality of health services.

In the Guidelines for Incentives for Health Professionals (2008) the incentives are stated as important levers that organisations can use to attract, retain, motivate, satisfy and improve the performance of their employees. They can be positive or negative, financial or non-financial, tangible or intangible. Financial incentives can be as wages, bonuses or loans while non-financial incentives include provision of work autonomy, flexibility in working time and recognition of work.

There are many intrinsic and extrinsic factors that affect the motivation of health professionals within the work environment. In general, motivational factors are classified as determinants at the economic, psychosocial, managerial and organizational levels (Afolabi et al., 2018; Baljoon et al., 2018; Bhatnagar, Gupta, Alonge and George, 2017; Borghi et al., 2018; Daneshkohan et al., 2015; Djordjević, Petrović, Vuković, Mihailović and

Dimić, 2015; Doğanlı and Demirci, 2014; Ghimire, Kumal, Mahato and Gupta, 2013; Grujičić, Jovičić-Bata, Rađen, Novakovic and Šipetić-Grujičić, 2016; Millar et al., 2017; Muthuri, Senkubuge and Hongoro, 2020; Sato et al., 2017; Shah, Zaidi, Ahmed and Rehman, 2016; Tshering, Tejativaddhana, Briggs and Wangmo, 2018).

Economic factors, defined as wages and allowances, financial incentives that meet the basic needs of employees such as housing and other living expenses, are an important and powerful factor in motivating health professionals (Engineer et al., 2016; Millar et al., 2017). Recognition, value and status, respect for privacy, social opportunities, and recommendation system can be listed as psychosocial factors (Doğanlı and Demirci, 2014; Pirinçci and Özdemir Güngör, 2019). Managerial and organizational factors can be stated as organizational structures, processes and resources, participation in decisions, training and promotion opportunities, organizational culture, a suitable working environment, physical working conditions, good management and leadership approaches, increasing the diversity of job duties, workload, lack of personnel, fair and open management (Kjellström et al., 2017; Afolabi et al., 2018). In this study the workplace characteristics selected and weighted in line with literature were classified under these three main headings.

This cross-sectional study was conducted in order to weight the factors affecting the motivation of health professionals according to the order of importance in line with the opinions of the participants and to rank these factors from the most important to the least important. The study will answer the questions of “What is the most important factor affecting the motivation of health professionals?” and “How are the factors ranked in order of importance?”. For this purpose, the literature was examined and the criteria affecting the motivation of health professionals used in previous studies were determined and the weights of the criteria were calculated by preparing paired comparison matrices. Paying attention to the factors that motivate health professionals, who work patiently and very intensely especially during the COVID 19 pandemic process, has gained more importance in Turkey as well as in the whole world. For this reason, this study is thought to be original in terms of examining the factors that motivate health professionals during the Covid 19 pandemic process.

Although there are studies in the literature examining the factors affecting the motivation of health professionals, while some of these studies examined these factors with a systematic analysis (Afolabi et al., 2018, Tshering et al., 2018, Muthuri et al., 2020, Baljoon et al., 2018, Willis-Shattuck et al., 2008); some of them collected data using a questionnaire/scale and analyzed the data with statistical methods (Daneshkohan et al., 2015, Çelik and Karaca 2017, Doğanlı and Demirci 2014, Djordjević et al., 2015), Ghimire et al., 2013, Kılıç and Keklik 2012, Grujičić et al., 2016, Sato et al., 2017) and few studies conducted qualitative research (Millar et al., 2017, Shah et al., 2016). However, no other study has been found ranking the factors affecting the motivation of health professionals according to their importance with the BAHP method. This is another original aspect of this study.

Methods

Population of the Study

The population of the research consists of health professionals (physicians, nurses, midwives and allied health professionals) working in a private hospital operating in Bandırma district of Balıkesir province, Turkey. Total of 190 health professionals work in the relevant hospital and no sampling method was used. There were 68 health workers who volunteered to participate in the study, and due to missing values 62 of them were included in the evaluation.

There is a general consensus in the literature that Analytical Hierarchy Process Method (AHP) does not require a large sample (Schmidt, Aumann, Hollander, Damm and Von der Schulenburg, 2015). Although there is no study on what the appropriate sample size should be for the AHP method to be applied, the method can be applied with a small number of participants. According to Kil, Lee, Kim, Li and Newman (2016), the method was applied in studies with a small sample (such as 5 experts, 18 experts, 25 experts opinions). In line with these opinions, it is thought that the sample size is sufficient to conduct the analysis with this method.

Ethical approval for the study was taken (issue 2021-45; date: June 21, 2021) from Bandırma Onyedü Eylül Üniversitesi Sağlık Bilimleri Girişimsel Olmayan Araştırmalar Etik Kurulu.

Data Analysis

A comprehensive literature review was used to determine the factors affecting the motivation of health professionals (Afolabi et al., 2018; Baljoon et al., 2018; Çelik and Karaca, 2017; Daneshkohan et al., 2015; Doğanlı and Demirci, 2014; Ghimire et al., 2013; Grujić et al., 2016; Kılıç and Keklik, 2012; Muthuri et al., 2020; Pirinççi and Özdemir Güngör, 2019; Sato et al., 2017; Sevinç, 2015; Shah et al., 2016; Tshering et al., 2018; Willis-Shattuck et al., 2008); a question form was created by preparing a paired comparison matrix for the factors.

In determining the importance levels of the criteria in the paired comparison matrices, one of the multi-criteria decision-making methods The Fuzzy Analytical Hierarchy Process (BAHP) method was used.

The paired comparison matrix for the criteria was prepared using "triangular fuzzy numbers". In weighting the criteria "*Chang's Extent Analysis Method*" (Chang, 1996) was taken as basis. The data was collected between the dates of 01.07.2021 – 30.08.2021.

Triangular fuzzy numbers used by Besikci, Kececi, Arslan and Turan (2016), Chou, Yen, Dang and Sun (2019); Ho (2011); Kumar and Kansara (2018); Paksoy, Pehlivan and Kahraman (2012); Singh and Prasher (2019) has been used in this study and has been provided in Table 1.

Table 1
Definition of FAHP Scale and Triangular Fuzzy Numbers

Saaty's Scale	Definition	Triangle fuzzy numbers	Reciprocal Triangle fuzzy numbers
1	Equally important	(1,1,1)	(1,1,1)
3	Weakly important	(2,3,4)	(1/4,1/3,1/2)
5	Fairly important	(4,5,6)	(1/6,1/5,1/4)
7	Strongly important	(6,7,8)	(1/8,1/7,1/6)
9	Absolutely important	(9,9,9)	(1/9,1/9,1/9)
2		(1,2,3)	(1/3,1/2,1)
4	Intermittent values between two adjacent scales	(3,4,5)	(1/5,1/4,1/3)
6		(5,6,7)	(1/7,1/6,1/5)
8		(7,8,9)	(1/9,1/8,1/7)

Fuzzy Data Envelopment Analysis Method

The mathematical background of the method is as follows (Kahraman, Cebeci and Ruan, 2004; Amini, Keshavarz, Keshavarz and Bagheri, 2017).

Let $O=\{o_1,o_2,\dots, o_n\}$ be an object set, and $U=\{g_1,g_2,\dots,g_m\}$ be a goal set. (1)

According to the Chang's extent analysis, each object is considered one by one, and for each object, the analysis is carried out for each of the possible goals, g_i . Therefore, m extent analysis values for each object are obtained and shown as follows:

$$M^1_{g_i}, M^2_{g_i}, \dots, M^m_{g_i}, \quad i = 1, 2, \dots, n \tag{2}$$

where $M^j_{g_i}$ ($j = 1, 2, \dots, m$) are all triangular fuzzy numbers. The membership function of the triangular fuzzy number is denoted by $M(x)$.

The steps of Chang's extent analysis are as follows:

Step 1: The value of fuzzy synthetic extent with respect to the i^{th} object is defined as:

$$S_i = \sum_{j=1}^m M^j_{g_i} \otimes \left[\sum_{i=1}^n \sum_{j=1}^m M^j_{g_i} \right]^{-1} \tag{3}$$

where \otimes denotes the extended multiplication of two fuzzy numbers. In order to obtain $\sum_{j=1}^m M^j_{g_i}$, the addition of m extent analysis values is applied.

$$\sum_{j=1}^m M^j_{g_i} = (\sum_{j=1}^m l_j, \sum_{j=1}^m m_j, \sum_{j=1}^m u_j) \tag{4}$$

Then, the inverse of the vector is computed as,

$$\left[\sum_{i=1}^n \sum_{j=1}^m M^j_{g_i} \right]^{-1} = \left(\frac{1}{\sum_{i=1}^n u_i}, \frac{1}{\sum_{i=1}^n m_i}, \frac{1}{\sum_{i=1}^n l_i} \right) \text{ where } \forall u_i, m_i, l_i > 0 \tag{5}$$

Step 2: The degree of possibility of $M_2 (l_2, m_2, u_2) \geq M_1 (l_1, m_1, u_1)$ is defined as

$$V(M_2 \geq M_1) = \sup_{y \geq x} [\min (M_1 (x), M_2 (y))] \tag{6}$$

which can be equivalently expressed as,

$$V(M_2 \geq M_1) = hgt (M_1 \cap M_2) = M_2 (d)$$

$$= \begin{cases} 1 & \text{if } m_2 \geq m_1 \\ 0 & \text{if } l_1 \geq u_2 \\ \frac{l_1 - u_2}{(m_2 - u_2) - (m_1 - l_1)}, & \text{otherwise} \end{cases} \tag{7}$$

To compare M_1 ve M_2 , both of the values $V(M_2 \geq M_1)$ and $V(M_1 \geq M_2)$ are required.

Step 3: The degree of possibility for a convex fuzzy number to be greater than k convex fuzzy numbers $M_i = 1, 2, \dots, k$ is defined as

$$V(M \geq M_1, M_2, \dots, M_k) = \min V(M \geq M_i), i = 1, 2, \dots, k \tag{8}$$

Step 4: Finally, normalized weight vector W is obtained by the normalization process.

$$W = (\min V (S_1 \geq S_k) \min V (S_2 \geq S_k), \dots, \min V (S_n \geq S_k))^T \quad k = 1, \dots, n$$

where W is a nonfuzzy number (9)

According to Zimmermann (2001), events or expressions encountered in real life can be ambiguous in many ways. The future status of the system may not be known exactly, especially due to the lack of information. This uncertainty is called “fuzziness”. One of the multi-criteria decision making methods handled under this uncertainty is the "FAHP" method. In cases where it is not always possible to decide with exact values in the face of real-life events, FAHP allows making judgments with values in certain intervals instead of working with exact values, and it is considered a very effective method for decision-makers (Vatansever, 2013). According to Kahraman et al. (2004), interval judgements are more confident than fixed value judgments for decision makers. The reason for this is the unable to explicit about the preferences of the participants easily as a result of the fuzzy nature of the comparison process. Especially in the Covid 19 pandemic process, motivational factors create uncertainty for healthcare professionals, require many situations to be handled together, and an intangible and latent concept such as motivation cannot be fully and precisely explained. In this context, the use of fuzzy method was preferred in the study.

The AHP method has been widely used and very useful method in making decisions (Amini and Rezaeenour, 2016; Wang, Luo and Hua, 2008). However, the conventional AHP method may be inadequate to respond to the requirements of decision makers, since the evaluations of qualitative attributes are always subjective and imprecise. In this case, the use of FAHP method will provide more accurate results in the decision-making process. The FAHP method is a synthetic extension of the classical AHP method (Gnanavelbabu and Arunagiri, 2018).

The FAHP method is a widely used in the multi-criteria decision making process (Chen, Hsieh and Do, 2015; Kubler, Robert, Derigent, Voisin and Traon, 2016). The reason for incorporating fuzzy set theory into classical AHP is based on the argument that human judgments and preferences cannot be accurately represented by crisp numbers due to inherent uncertainty in human perception (Ahmed and Kilic, 2019). In this context, it was found appropriate to use the FAHP method in the study.

Chang's Extent Analysis Method was used in FAHP analysis. This method has been preferred because it is widely used and frequently preferred in the literature, and also it is one of the latest popular approaches to solving the FAHP methodology (Srdjevic and Medeiros, 2008; Celik, Er and Ozok, 2009; Chen et al., 2015; Kubler et al., 2016). On the other hand, many researchers use this method in their studies (Nguyen, Nguyen, Huynh and Nguyen, 2020; Mosadeghi, Warnken, Tomlinson and Mirfenderesk, 2020; Mavi and Standing, 2018; Sarraf and McGuire, 2020).

Results

Demographic and descriptive characteristics of the participants are given in Table 2.

Table 2
Demographic and descriptive characteristics of the participants

Variables		N	%			
Gender	Female	47	75.8			
	Male	15	24.2			
Marital Status	Married	46	74.2			
	Single	16	25.8			
Level of Education	High School	11	17.7			
	Associate Degree	22	35.5			
	Undergraduate	10	16.1			
	Graduate	19	30.6			
Profession	Physicians	15	25.2			
	Nurse/Midwives	19	29.6			
	Allied Health Professionals	28	45.2			
Willingness in the profession	Yes	58	93.5			
	No	4	6.5			
Shifts	08.00-16.00	35	56.5			
	Constantly	27	43.5			
		Total	62	100		
Other Continuous Variables		n	Mean	Std Dev	Min	Max
Age		62	35.08	10.25	22	64
Working Years in the Institution		62	4.59	3.77	<1	14
Working Years in the Profession		62	12.74	9.16	1	41

75.8% of the participants are female, 74.2% are married, 35.5% are associate degrees and 30.6% are graduates. The average age of the participants is around 35, and their age ranges from 22 to 64. The average of working years in the institution is 4.59; the average working year in the profession is 12.74 years. While 56.5% work in day shifts (08.00-16.00), 43.5% of them work shifts constantly. 93.5% stated that they chose their profession willingly (Table 2).

Table 3
The synthetic extent values of main and sub-criteria

Main Criteria	S _{Economic factors} = (0,3772, 0,3949, 0,4213)
	S _{Psychosocial Factors} = (0,2852, 0,3040, 0,3169)
	S _{Managerial and Organizational Factors} = (0,2862, 0,3011, 0,3159)
Economic Factors	S _{wage} = (0,4083, 0,4273, 0,4470)
	S _{economic and material rewards} = (0,3561, 0,3710, 0,3862)
	S _{incentives} = (0,1947, 0,2017, 0,2094)
Psychosocial Factors	S _{recognition} = (0,2606, 0,2752, 0,2903)
	S _{value and status} = (0,2719, 0,2868, 0,3021)
	S _{respect for privacy} = (0,1899, 0,2003, 0,2114)
	S _{social opportunities and activities} = (0,1289, 0,1363, 0,1443)
Managerial and Organizational Factors	S _{recommendation system} = (0,0962, 0,1014, 0,1073)
	S _{physical working conditions} = (0,1022, 0,1066, 0,1114)
	S _{team work} = (0,1435, 0,1499, 0,1566)
	S _{effective communication system} = (0,1447, 0,1513, 0,1579)
	S _{participate in decision making} = (0,1012, 0,1055, 0,1101)
	S _{promotion/training and career development opportunities} = (0,1479, 0,1543, 0,1611)
S _{fair and open management policy} = (0,1754, 0,1830, 0,1908)	
S _{job security} = (0,1434, 0,1494, 0,1557)	

The synthetic extent values were calculated as triangular fuzzy numbers for the main and sub-criteria (Table 3).

Table 4

The lowest vector values calculated for the main and sub-criteria

Main Criteria
$\min V (S_{\text{Economic factors}} \geq S_{\text{Psychosocial Factors}}, S_{\text{Managerial and Organizational Factors}}) = 1,00000$
$\min V (S_{\text{Psychosocial Factors}} \geq S_{\text{Economic factors}}, S_{\text{Managerial and Organizational Factors}}) = 0,00000$
$\min V (S_{\text{Managerial and Organizational Factors}} \geq S_{\text{Economic factors}}, S_{\text{Psychosocial Factors}}) = 0,00000$
Economic Factors
$\min V (S_{\text{wage}} \geq S_{\text{economic and material rewards}}, S_{\text{incentives}}) = 1,00000$
$\min V (S_{\text{economic and material rewards}} \geq S_{\text{wage}}, S_{\text{incentives}}) = 0,00000$
$\min V (S_{\text{incentives}} \geq S_{\text{wage}}, S_{\text{economic and material rewards}}) = 0,00000$
Psychosocial Factors
$\min V (S_{\text{recognition}} \geq S_{\text{value and status}}, S_{\text{respect for privacy}}, S_{\text{social opportunities and activities}}, S_{\text{recommendation system}}) = 0,614293$
$\min V (S_{\text{value and status}} \geq S_{\text{recognition}}, S_{\text{respect for privacy}}, S_{\text{social opportunities and activities}}, S_{\text{recommendation system}}) = 1,00000$
$\min V (S_{\text{respect for privacy}} \geq S_{\text{recognition}}, S_{\text{value and status}}, S_{\text{social opportunities and activities}}, S_{\text{recommendation system}}) = 0,00000$
$\min V (S_{\text{social opportunities and activities}} \geq S_{\text{recognition}}, S_{\text{value and status}}, S_{\text{respect for privacy}}, S_{\text{recommendation system}}) = 0,00000$
$\min V (S_{\text{recommendation system}} \geq S_{\text{recognition}}, S_{\text{value and status}}, S_{\text{respect for privacy}}, S_{\text{social opportunities and activities}}) = 0,00000$
Managerial and Organizational Factors
$\min V (S_{\text{physical working conditions}} \geq S_{\text{team work}}, S_{\text{effective communication system}}, S_{\text{participation in decision making}}, S_{\text{promotion/training and career development opportunities}}, S_{\text{fair and open management policy}}, S_{\text{job security}}) = 0,00000$
$\min V (S_{\text{team work}} \geq S_{\text{physical working conditions}}, S_{\text{effective communication system}}, S_{\text{participation in decision making}}, S_{\text{promotion/training and career development opportunities}}, S_{\text{fair and open management policy}}, S_{\text{job security}}) = 0,00000$
$\min V (S_{\text{effective communication system}} \geq S_{\text{physical working conditions}}, S_{\text{team work}}, S_{\text{participation in decision making}}, S_{\text{promotion/training and career development opportunities}}, S_{\text{fair and open management policy}}, S_{\text{job security}}) = 0,00000$
$\min V (S_{\text{participation in decision making}} \geq S_{\text{physical working conditions}}, S_{\text{team work}}, S_{\text{effective communication system}}, S_{\text{promotion/training and career development opportunities}}, S_{\text{fair and open management policy}}, S_{\text{job security}}) = 0,00000$
$\min V (S_{\text{promotion/training and career development opportunities}} \geq S_{\text{physical working conditions}}, S_{\text{team work}}, S_{\text{effective communication system}}, S_{\text{participation in decision making}}, S_{\text{fair and open management policy}}, S_{\text{job security}}) = 0,00000$
$\min V (S_{\text{fair and open management policy}} \geq S_{\text{physical working conditions}}, S_{\text{team work}}, S_{\text{effective communication system}}, S_{\text{participation in decision making}}, S_{\text{promotion/training and career development opportunities}}, S_{\text{job security}}) = 1,00000$
$\min V (S_{\text{job security}} \geq S_{\text{physical working conditions}}, S_{\text{team work}}, S_{\text{effective communication system}}, S_{\text{participation in decision making}}, S_{\text{promotion/training and career development opportunities}}, S_{\text{fair and open management policy}}) = 0,00000$

The lowest vector values were calculated for the main and sub-criteria using synthetic values in Table 4. The weights of the criteria were calculated using these values in Table 5.

Table 5
The weights of the main criteria and sub-criteria

Main Criteria	Weight	Sub-criteria	Local Weights	Global Weights
Economic Factors	1,000	Wage	1,000	1,000
		Economic and material rewards	0,000	0,000
		Incentives	0,000	0,000
Psychosocial Factors	0,000	Recognition	0,381	0,000
		Value and status	0,619	0,000
		Respect for privacy	0,000	0,000
		Social opportunities and activities	0,000	0,000
		Recommendation system	0,000	0,000
Managerial and Organizational Factors	0,000	Physical working conditions	0,000	0,000
		Teamwork	0,000	0,000
		Effective communication system	0,000	0,000
		Participation in decision making	0,000	0,000
		Promotion/training and career development	0,000	0,000
		Fair and open management policy	1,000	0,000
		Job security	0,000	0,000

The weights criteria take values between 0-1. The values indicated with 1 in the relevant study are the values with the highest importance. The criteria specified with 0 were not considered important for health professionals. According to this, when the main criteria are listed from the criteria with the highest priority, it is seen that economic factors (1.00) are the most important criteria on the motivation of health professionals. The sub-criterion with the highest priority among the economic factors criterion is "wage" (1.00). When the psychosocial factors are evaluated, the criterion of "value and status" (0.619) and "recognition" (0.381) are important; among the managerial and organizational factors, the criterion of "fair and open management policy" (1.00) was found to be more important on motivation than the others (Table 5).

Conclusion

In this study the economic factors was found to be the most important motivation factor for health professionals. Within the economic factors the highest priority was given to "wages". For the psychosocial factors the criterion of "value and status" and "recognition" were seen important; and among the managerial and organizational factors, the criterion of "fair and open management policy" was found to be important for motivation.

In a study conducted with nurses in Turkey was found that the most important motivating factors were harmony in work between employees and managers and improvement of working conditions for improved job satisfaction (Doğanlı and Demirci, 2014). In another the most important factor that affects the life quality and motivation of health personnel was found to be wages and other economical benefits (Kılıç and Keklik, 2012). In a study conducted with 202 nurses in Turkey, the most important motivation factor was found as "job assurance", "social security" and "appreciation by employers" "economic factors" (İnfal and Bodur, 2011). In a state hospital in Muğla, Turkey with a population of 117 nurses 20 different motivation tools were grouped

under 7 factors and as a result the harmony in work between employees & administrators and improvement of working conditions of the were found to be the most important factors (Doğanlı and Demirci, 2014).

Purohit and Bandyopadhyay (2014), found that for doctors, the intrinsic factors such as job security, respect and acknowledgement were significantly more priority than extrinsic factors. In another study it was found that, for public and private health professionals, the main factors of motivation were: "professional recognition", "achievements/accomplishments", "development opportunity", "challenges", "working environment" and "remuneration" (Ferreira, Neto, Vasconcelos and Souki, 2016).

In a study conducted in Nepal, with a total of 335 health workers, including doctors, nurses, other paramedics and administrative staff the financial benefits they acquired while higher age, higher education and lower service duration were significant factors for the motivation of health workers along with financial rewards, working environment and opportunity for capacity development (Ghimire et al., 2013). They concluded that although salary and other financial benefits matter, other factors also play a crucial role for the motivation and performance of health workers.

Also with University Medical Centers 250 health professionals in Iran, out of 17 motivating factors the most important motivating factors for were determined as good management, supervisors and managers' support and good working relationship with colleagues (Daneshkohan et al., 2011).

In three Ethiopian public hospitals: with a total of 103, 51 and 72 health professionals, the motivation of health professionals was found to be affected by factors related to supervisors, financial benefits, job content and hospital location. Health professionals earning monthly financial benefits had higher motivation score when compared with health professionals who did not obtain any financial benefits (Dagne, Beyene and Berhanu, 2015). They concluded that efforts should be made to provide financial benefits to health professionals and officially recognizing best performance is also suggested.

In Tanzania, based on the cross-sectional survey results, focus group discussions with 70 health workers at 17 public health facilities in order to find out the level of motivation from the perspective of the health workers results demonstrated that job description was the key variable for health worker motivation in both Management and Performance Aspects and also the motivation scores in Individual Aspects were associated with salary scale (Sato et al., 2017).

In a study aiming to examine if there was a difference in job satisfaction and work motivation between physicians and nurses in the region of Central Serbia with 226 physicians and 606 nurses. In relation to nurses, physicians were significantly more motivated by the following factors: achieving goals of the health facility (77.4% vs. 59.4%), recognition for good work performance (70.8% vs. 54.4%), good interpersonal relationships (81.4% vs. 65.8%), opportunities for promotion and advancement (60.2% vs. 44.4%), monthly income (63.7% vs. 35.3%), working conditions (65.9% vs. 49.2%), cooperative working atmosphere (74.8% vs. 55.3%), training opportunities (74.8% vs. 48.5%), job security (84.6% vs. 66.9%), support by superiors (76.1% vs. 62.4%), autonomy in the workplace (84.5% vs. 63.2%), current equipment (76.1% vs. 57.5%), and reward for excellent work performance (69.0% vs. 49.0%) (Grujicic et al., 2016).

As a result of semi-structured interviews with doctors working in basic health units and in-depth interviews with district and provincial government health managers In Pakistan, the organizational factors emerged as the most significant whereby human resource policy, career growth structure, performance appraisal and monetary benefits played an important role in motivation (Shah et al., 2016).

It is not surprising that wages emerge as an important factor for health professionals in today's Covid 19 pandemic period, when economic recessions are experienced and social opportunities are limited. It is thought that knowing the motivation factors of health professionals who work with devotion under intense conditions, especially during the Covid 19 pandemic process, will contribute to the development of health policies. In conclusion, the authors suggest that in order to improve health professional motivation the wages can be improved and the further development of policy and practice that recognizes the value and status of the health professionals and fair and open management policy can be adopted. In this context, improvements in the factors that motivate health professionals during this pandemic process will contribute to increasing their morale and motivation.

The limitation of the study is that the results of the study cannot be generalized to all health professionals, since the sample population is limited with the health professionals working in one private hospital. In addition, the research findings are limited with the answers provided by the participants. Also it is recommended for future studies to evaluate the factors that motivate health professionals working in public hospitals or to use qualitative methods such as in-depth interviews.

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Genişletilmiş Özet

Amaç

Kesitsel tipteki bu araştırma, sağlık çalışanlarının motivasyonuna etki eden faktörlerin katılımcıların görüşleri doğrultusunda önem derecesine göre ağırlıklandırılması ve bu faktörlerin en önemliden itibaren sıralanması amacıyla yapılmıştır. Bu amaç doğrultusunda çalışmada sağlık çalışanlarının motivasyonuna etki eden faktörler arasında en önemli faktör hangisidir? Faktörler önem derecelerine göre nasıl sıralanmaktadır? sorularına yanıt aranacaktır. Bu kapsamda alan yazın incelenip daha önce yapılmış çalışmalarda kullanılan sağlık çalışanlarının motivasyonunu etkileyen kriterler belirlenmiş ve ikili karşılaştırma matrisleri hazırlanarak kriterlerin ağırlıkları hesaplanmıştır.

Tasarım ve Yöntem

Araştırmanın evrenini Balıkesir ilinin Bandırma ilçesinde faaliyet gösteren bir özel hastanede görev yapan sağlık çalışanları oluşturmaktadır. İlgili hastanede toplam 190 sağlık çalışanı görev yapmaktadır. Araştırmada örneklem seçilmeden evrenin tamamına ulaşılmaya çalışılmıştır. Araştırmaya katılmaya gönüllü olan 68 sağlık çalışanı olup, eksik veri nedeniyle 62'sinin görüşleri değerlendirme kapsamına alınmıştır.

Literatürde AHP'nin büyük bir örneklem gerektirmediğine dair genel bir fikir birliği vardır (Schmidt ve diğerleri, 2015). AHP yönteminin uygulanabilmesi için uygun örneklem büyüklüğünün ne olması gerektiğine ilişkin yapılmış bir çalışma bulunmamakla birlikte az sayıda katılımcı ile de yöntem uygulanabilmektedir. Kil ve diğerleri (2016)' ne göre AHP yöntemi ile ilgili literatür incelendiğinde yöntemin az sayıda (5 uzman, 18

uzman, 25 uzman gibi) uzmanın görüşü alınarak küçük örneklem büyüklüğündeki çalışmalarda da uygulandığı saptanmıştır. Bu nedenlerle çalışmada ulaşılan örneklem büyüklüğünün yöntem için yeterli olduğu düşünülmektedir.

Çalışma için etik onay (sayı 2021-45; tarih: 21 Haziran 2021) Bandırma Onyediy Eylül Üniversitesi Sağlık Bilimleri Girişimsel Olmayan Araştırmalar Etik Kurulu'ndan alınmıştır.

Sağlık çalışanlarının motivasyonuna etki eden faktörlerin belirlenmesinde kapsamlı bir şekilde yapılan literatür taramasından yararlanılmış (Afolabi ve diğerleri, 2018; Baljoon ve diğerleri, 2018; Çelik ve Karaca, 2017; Daneshkohan ve diğerleri, 2015; Doğanlı ve Demirci, 2014; Ghimire ve diğerleri, 2013; Grujić ve diğerleri, 2016; Kılıç ve Keklik, 2012; Muthuri ve diğerleri, 2020; Pirinççi ve Özdemir Güngör, 2019; Sato ve diğerleri, 2017; Sevinç, 2015; Shah ve diğerleri, 2016; Tshering ve diğerleri, 2018; Willis-Shattuck ve diğerleri, 2008); faktörlere ilişkin ikili karşılaştırma matrisi hazırlanarak soru formu oluşturulmuştur. İkili karşılaştırma matrislerinde yer alan kriterlerin önem derecelerinin ağırlıklandırılarak belirlenmesinde istatistiksel yöntemler yerine çok kriterli karar verme yöntemlerinden biri olan Bulanık Analitik Hiyerarşi Prosesi (BAHP) yöntemi kullanılmıştır. Bu yöntemde öncelikle kriterlere ilişkin ikili karşılaştırma matrisi “triangular fuzzy numbers” kullanılarak hazırlanmıştır. Kriterlerin ağırlıklandırılmasında ise “Chang’in Genişletilmiş Analiz Yöntemi” (Chang, 1996)’nden yararlanılmıştır. Veriler 01.07.2021 – 30.08.2021 tarihleri arasında toplanmıştır.

Çalışmada Besikci ve diğerleri, 2016; Chou ve diğerleri, 2019; Ho, 2011; Kumar ve Kansara, 2018; Paksoy ve diğerleri, 2012; Singh ve Prasher, 2019 tarafından kullanılan triangular fuzzy numbers kullanılmıştır.

Bulgular

Katılımcıların % 75,8’i kadın, % 74,2’si evli, % 35,5’i ön lisans, % 30,6’sı lisansüstü mezundur. Katılımcıların yaş ortalaması yaklaşık 35 olup, yaşları 22-64 arasında değişmektedir. Kurumda çalışma yılı ortalaması 4,59; meslekte çalışma yılı ortalaması ise 12,74 yıldır. % 56,5’i gündüz vardiyasında (08.00-16.00) çalışırken, % 43,5’inin çalıştığı vardiya sürekli değişmektedir. % 93,5’i mesleğini isteyerek seçtiğini belirtmiştir.

Ana kriterler kendi içinde en yüksek önceliğe sahip kriterden itibaren sıralandığında ekonomik faktörlerin sağlık çalışanlarının motivasyonu üzerinde en önemli kriter olduğu görülmektedir. Ekonomik faktörler kriteri içerisinde en yüksek önceliğe sahip alt kriter ise “ücret” tir. Psikososyal faktörler kendi içerisinde değerlendirildiğinde “değer ve statü” kriteri önemliyken; yönetsel ve örgütsel faktörler içerisinde “adil ve açık yönetim politikası” kriteri diğerlerine göre motivasyon üzerinde daha önemli görülmüştür.

Sınırlılıklar

Örneklem popülasyonunun özel bir hastanedeki sağlık çalışanları ile sınırlı olması nedeniyle çalışmanın sonuçlarının tüm sağlık çalışanlarına genellenememesi çalışmanın sınırlılığıdır. Ayrıca araştırma bulguları katılımcıların verdiği yanıtlar ile sınırlı olup, verilen yanıtların güvenilir olduğu varsayılmaktadır.

Öneriler

Ekonomik durgunlukların yaşandığı ve sosyal imkanların kısıtlı olduğu günümüz Covid 19 pandemi döneminde ücretlerin sağlık profesyonelleri için önemli bir faktör olarak ortaya çıkması şaşırtıcı değildir. Özellikle Covid 19 pandemi sürecinde yoğun bir tempo ve özveri ile çalışan sağlık profesyonellerini motive eden faktörlerinin bilinmesinin sağlık politikalarının geliştirilmesine katkı sağlayacağı düşünülmektedir. Sağlık profesyonellerinin motivasyonunu artırmak için ücretlerin iyileştirilebileceği, sağlık çalışanlarının değerini ve statüsünü artıran, adil ve açık yönetim politikasının benimsenmesini sağlayan politika ve uygulamaların daha da geliştirilmesi önermektedir. Bu bağlamda sağlık çalışanlarını bu pandemi sürecinde motive eden faktörlerde iyileştirmeler yaparak onların moral ve motivasyonun artırılmasına katkıda bulunulacaktır.

Özgün Değer

Özellikle COVID 19 pandemi sürecinde sabırla ve çok yoğun çalışan sağlık çalışanlarını motive eden faktörlerin bilinmesi tüm dünyada olduğu gibi Türkiye'de de daha fazla önem kazanmıştır. Bu nedenle bu çalışmanın sağlık çalışanlarını Covid 19 pandemi sürecinde motive eden faktörlerin incelenmesi açısından özgün olduğu düşünülmektedir.

Literatürde sağlık çalışanlarının motivasyonuna etki eden faktörlerin incelendiği çalışmalar bulunmaktadır. Bu çalışmalardan Afolabi ve diğerleri (2018), Tshering ve diğerleri (2018), Muthuri ve diğerleri (2020), Baljoon ve diğerleri (2018), Willis-Shattuck ve diğerleri (2008) tarafından yapılan çalışmada sağlık sektöründe çalışanların motivasyonuna yol açan temel örgütsel faktörler sistematik analiz ile incelenmiştir. Daneshkohan ve diğerleri (2015), Çelik ve Karaca (2017), Doğanlı ve Demirci (2014), Djordjević ve diğerleri (2015), Ghimire ve diğerleri (2013), Kılıç ve Keklik (2012), Grujić ve diğerleri (2016), Sato ve diğerleri (2017) tarafından yapılan çalışmada anket/ölçek benzeri soru formu kullanılarak veri toplandığı ve verilerin istatistiksel yöntemlerle değerlendirildiği görülmektedir. Millar ve diğerleri (2017) ve Shah ve diğerleri. (2016) sağlık çalışanlarının motivasyonu ile ilgili nitel bir araştırma yürütmüştür. Ancak sağlık çalışanlarının motivasyonuna etki eden faktörlerin bulanık analitik hiyerarşi prosesi (BAHP) yöntemi ile önem derecelerine göre sıralandıkları başka herhangi bir çalışmaya rastlanılmamıştır. Bu durum bu çalışmanın özgün yönüdür.

Araştırmacı Katkısı: Gözde YEŞİLAYDIN (%25), Şirin ÖZKAN (%25), Ece UĞURLUOĞLU ALDOĞAN (%25), Elçin KURT (%25).