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ORIGINAL ARTICLE

Estimating the Health Care Providers' Number Needed in Northwest Health Service Centers of Tehran Based on Workload Index

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A B S T R A C T

Background: One of the major challenges of primary health care (PHC) in developing countries is supplying the growing needs of the populations with sufficient and skilled health workers. In this context, use of a simple and relevant workforce planning method such as Workload Indicators of Staffing Need (WISN) could help authorities allocate adequate number of professionals to health centers to meet the health needs of target populations.

Methods: This was a descriptive-analytical study, and WISN methodology was used at 48 Comprehensive Health Centers (CHC) located in the northwest of Tehran, in 2022. The present study was conducted in 7 steps and included measures such as the available work Stime, initial and final required manpower, extracurricular activities and their coefficients, standard work activity and workload, and scheduling activities.

Results: According to the collected data, the total number of health care workers needed for the covered population was calculated to be approximately 1018 people, and the ratio of available manpower to the required manpower was reported as 24%; this indicated a 76% difference in the number of health care providers regarding the implementation of complete service package.

Conclusion: The results of the research showed that if all the referrals are made through network, the network would likely have a shortage of human resources. Although the standard workload in most cases is lower than anticipated based on the reviewed performance regarding the health care provided, this can be caused by not going to the center to receive services, going to the private sector, and also not knowing about the services that can be provided.

Keywords: Healthcare Worker, Healthcare Provider, Workload Index, Manpower Estimation, Health Services Centers, Tehran

Introduction

Considering the huge amount of resources at the disposal of the health sector, there are still gaps between the development of available resources and the required resources in the health sector, and these existing gaps indicate the need for effective use of resources (1). Poor management in the organization will lead to the improper use of resources, such as waste of resources, indicating that a certain share of services can be obtained by spending less resources. By avoiding the waste of financial and human resources, better and more quality services can be provided to the customers (2). Therefore, despite the fact that increasing the resources of the health sector is important, the

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distribution of these resources among different regions is more significant. As previous studies have shown, simply, increasing health resources will not reduce inequality in the distribution of resources (3).

The process of evaluating and measuring the quantity of health sector resources and the method of distributing resources in the health sector among different regions for improving public health should be done continuously by the policymakers and planners of the health systems. Investigations carried out in different countries demonstrated that some regions have performed better in the service in comparison with other regions of the same country and have enjoyed better growth and development (2). The growth and development of any organization depends on the suitable use of human resources, and considering that in an organization there are diversity and different levels of individual skills, the role of planning and appropriate distribution of human resources in an organization is more significant. Proper planning and distribution of specialized manpower in the health sector is the only way that makes obtaining fair and desirable health care possible (3).

According to the available evidence, it can be stated that manpower planning leads to the appropriate combination of manpower to reach health goals (4). Studies have shown that in some hospital departments, due to the overlap of duties, the workload of personnel can be reduced by correctly defining the job; but, when the work is specialized and it can only be done by limited personnel, the pressure of work on the personnel increases, which can affect the quality of services provided to the patients and the quality of communication with colleagues, and cause job stress, burnout, and problems such as lack of motivation and absenteeism (4). In order to provide high-quality, safe, and effective health services, there is a need for health and medical personnel with sufficient capability, experience, and skills (5). Unequal distribution of human resources in the health sector is one of the examples of injustice in the sector, which affects the quantity and quality of services (6).

According to the report by the World Health Organization, about 59 million people in the world are working in health sectors whose distribution of human resources is uneven both among and inside countries, and compared to health needs, there is a 4.3 million lack of human resources in the health sector. According to the report, it was shown that Canada and the United States of America, which account for 10% of disease burden in the world, have almost 37% of the world's health human resources, while African countries, which have 24% of the disease burden in the world, only have 3% of the total human resources in the health sector (7).

According to the stated content, health network system in Iran cannot continue its activities in the future without proper planning for human resources, especially in the field of healthcare providers. Issues such as out-of-control migration of specialized human resources to foreign countries, increase in the level of literacy and people's expectations, unclear economic situation in the country due to global sanctions against Iran, lack of a specific program on medical students' admission at public and private universities, double the importance of the issue in the country. Therefore, estimating the required manpower in healthcare organizations through approved methods, including Workload Index of Staffing Needs (WISN), can provide an effective approach in overcoming the problems related to manpower planning for policy-makers. Accordingly, the present research was carried out with the aim of estimating the number of health care personnel required by comprehensive health service centers in northwest of Tehran based on workload index.

Materials and Methods

WISN methodology was used to assess the required number of health workers in the northwest of Tehran. Primary health network is responsible for providing primary health care to a population of 1380412 people via 48 Comprehensive Health

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Centers (CHC). The data on254 health workers from 2022 to 2023 were collected.

WISN Calculation

WISN is designed based on the standard workload performed by health sector employees. Each of the centers providing healthcare services has special and unique workload patterns and activities, all of which require the efforts and time of certain groups of employees. Standard can be determined for any type of workload including inpatient and outpatient care and similar activities. But, in order for the calculated manpower figure to be useful for managers and decision-makers, it should be compared with the actual number of manpower in the centers in order to determine the amount of shortage and surplus of manpower in each center and in each employees' group.

Using workload parameters, including available work time, standard work activity, and standard workload in WISN method, the authors took seven steps to assess the staffing needs of health care workers.

In the first step, the annual workload for healthcare workers was calculated. Afterwards, the standard of work activity for healthcare providers was determined. For this purpose, the list of services provided by health care providers was extracted from the guidelines approved by the Ministry of Health and Medical Education and documents in CHCs. In the next step, the standard workload for health workers was determined. Then, the frequency of repetition for each activity per year was calculated. The frequency of repetition of each process in CHCs was considered by health care providers based on the guidelines of the Ministry of Health for the populations covered by the health center. In the next step, extracurricular activities and their coefficient were calculated. In this phase, such activities were identified, similar items were timed, and their coefficient was determined. The coefficient of extracurricular activities for each of the super-activities and individual activities was calculated separately. Finally, the final number of the required health care providers were calculated using the following formula.

Needed human resources = (basic manpower requirements*coefficient of extracurricular activities) + super individual activity

Data Collection Tools

In the present study, time measurement method was used to calculate the time required to perform each process, and a theoretical and practical training session was held in one of the health centers to teach correct time measurement. In this research, a stopwatch was used to measure the time of processes, which was finally measured and recorded on a sheet. Other data collection tools included data collection form, in which the list of programs, processes, activities, standard frequency of processes, and the time of each activity are recorded.

Data Collection Method

At first, the guidelines approved by the Ministry of Health, Treatment, and Medical Education, as well as the existing organizational data at headquarters of the Northwest Health Center were used to define and describe the duties of health care experts, and finally, the observation method was used to measure time.

Data Analysis Method

In order to perform the calculations, relevant formulas were used in Excel 2016 software. All the formulas of WISN method were defined in Excel, and calculations were presented in the form of text reports and tables.

Results

The collected data showed that 10 health programs were provided by healthcare workers in CHCs in the northwest of Tehran, and each program had separate processes and activities. In this study, there were 94,680 minutes' time available per year for each healthcare workers to provide services, and 10 programs and 21 processes were identified in the description of the tasks assigned to health care providers. After that, the processes were

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analyzed into applicable activities and timed. Finally, according to the collected data and calculations, the total number of health care providers required for the covered population was calculated in case of providing full services to the population covered by approximately 1018 people. Based on the collected statistics, the number of health care providers was 254 people, and the ratio of available manpower to the required manpower was reported as 0.24. In other words, if all the covered population referred, 76% of the difference in the number of health care providers could be seen in the implementation of the complete service package. It is worth mentioning that based on the performance of different centers, referrals in the centers were much less than the standard workload.

If all the covered people go went to the centers to receive health services, approximately 1018 health care workers would be needed based on the standard to provide a full service package. However, performance shows that the covered population had referrals in some services at the level of standard service. In some services, people's acceptance to receive services is far from the standard of services which can be provided. It can be concluded that if the covered population went to the centers for all the services provided, there would be a 76% personnel shortage. As the collected data revealed, the performance of service provision was far less than the standard level, which could be caused by the lack of awareness about the covered population regarding the services that can be provided. If covered population go to the private sector to receive services and or there is a lack of motivation to provide more services, there might be low referrals of the covered population. For this reason, the investigation of the reasons for non-referral of the covered population to receive services, despite the fact that such services are provided free of charge in health centers, could be investigated in a separate research project.

Discussion

The aim of this study was to estimate the number of health care providers needed in the northwest of Tehran's CHCs based on the workload index. In this study, the available time of each health care provider was 94680 minutes, and 10 programs and 21 processes were identified in health care providers' job descriptions. In the next step, the processes were analyzed into applicable activities. The total number of the participants was determined according to the collected data and calculations.

As mentioned, in this study, calculations and findings of the research showed a 76% difference in the number of health care providers for providing a complete standard of service package for health care. There was a gap between the number of services provided compared to the standard number, and lack of healthcare providers could be one of the causes. Lack of human resources might be among the reasons for why the number of provided services was much lower than the standard one, having many adverse effects on the indices of the population covered. As a result, the standards of health indicators as well as preventable disease prevalence would not be reached.

A study conducted in South Africa investigated the views of health managers about implementing WISN methods at the level of primary health care delivery. The results indicated that focusing on the limited or active implementation of WISN approach could provide a suitable structure for successful implementation of WISN in PHC settings. Data analysis showed that solving a number of issues required ensuring the success of WISN implementation method. The many views or beliefs that may be present as barriers or activators to the implementation of the WISN methodology or on human resource planning and management, can be categorized into six groups: political and leadership desire, activism and mobility, engagement and consultative approach with key partners and stakeholders, transparent and ongoing communication, access to human and financial resources, and sustainability in leadership and PHC staff (8).

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According to the findings of this study, the ratio of available manpower to the required number was 24%. In other words, if the entire covered population went to the centers, the 76% difference in the number of health care providers can be seen in the implementation of the complete service package.

According to a study conducted by Farati to estimate the human resources needed for pathology in Semnan University of Medical Sciences, the results indicated that there were currently 14 experts and 1 clerk working in pathology department, which was 19, according to the required manpower. These results showed that the staff in pathology department were under pressure to perform existing tasks due to the lack of human resources. This study concluded that the shortage of personnel in health sector is one of the challenges of providing high-quality services to the population. Proper management and planning of human capital can improve the efficiency of activities and processes by ensuring optimal workload (9).

Conclusion

It can be said that the northwest region of Tehran is facing a lack of human resources to provide a complete health care service package based on the standards. This indicated that if the northwest Tehran Health Center wanted to provide all the health needs of the covered population, and all the covered population referred to the centers in the northwest to receive health services, there would be a shortage of personnel. It is worth mentioning that the services provided were much less than the standard workload; this might indicate that we there was no shortage of power in the covered areas based on performance. The population welcomes only some of the services, which causes work pressure on health care providers, and as a result, some of the services can be integrated. Manpower management and optimal allocation of forces in employment matters should have higher priority; currently, one of the most important challenges of health systems around the world is ensuring the adequacy of the number of health care workers as well as the existence of specialized and qualified personnel. Correct management and planning for human resources can optimize the workload of employees and significantly improves the efficiency of work; this is because the increase or decrease of human resources leads to a decrease in productivity and efficiency. One of the advantages of the current research is the use of the WISN method, which is a powerful method in identifying the priorities for human resources supply and the participation of managers in decision-making for manpower estimation. Due to the feasibility of using this method and its potential to be used in all departments of health and treatment centers, it is suggested that managers use this method to estimate their human resources.

Limitations

One of the limitations of using this method was its low generalizability, which can be ignored considering that the purpose of conducting such studies was using a scientific and logical method to estimate human resources. Due to COVID-19 pandemic, health care workers were faced with a large workload, and sometimes they were not able to cooperate with researchers. Because of the presence of the researcher during the time of providing the service and measuring the time of activities, health care workers might have been affected by this presence and the time measured might not correspond to the actual time of activities.

Implications of the Study

The findings of the research can be used in human resources planning regarding the programs of the Ministry of Health and Medical Sciences as well as universities of medical sciences. The findings of this study can help to the improve quantitative and qualitative indicators as well as the standards of care provided by health care workers in the society, and ultimately, improve the health of the society.

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Authors' contributions

Alipanah M, Poorasghari H designed the research; Izadi SH conducted the study; Nourizadeh Tehrani P, Alipanah M analyzed data; and Alipanah M, Nourizadeh Tehrani P wrote the paper., and Poorasghari H had the primary responsibility for final content. All the authors read and approved the final manuscript.

Ethical Considerations

The code of ethics was obtained from the ethics committee All the subjects entered the study consciously and with consent. Withdrawal was free in any part of the study for the participants,Their information was kept confidential.

Ethical Approval

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Conflict of Interests

The authors declared no conflict of interests.

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