

# DETERMINATION OF FAMILY PHYSICIAN NEED WITH WORKLOAD INDICATORS OF STAFFING NEED METHOD IN TURKEY

Salih Mollahaliloğlu<sup>1</sup>, Baki Can Metin<sup>2</sup>, Mustafa Kosdak<sup>3</sup>, Sarp Üner<sup>2</sup>

<sup>1</sup>Yıldırım Beyazıt University, Faculty of Medicine, Department of Public Health, Ankara

<sup>2</sup>Hacettepe University, Faculty of Medicine, Department of Public Health, Ankara

<sup>3</sup>Ministry of Health, Health Sciences General Directorate, Ankara

## ABSTRACT

**Objective:** The aim of this study was to determine the need for family physicians in Turkey by using Workload Indicators of Staffing Need method.

**Material and Method:** Data (year 2011) of services provided by 3,507 family physicians, which were working in 10 provinces selected from different regions of Turkey, were used in the study.

**Results:** After the assessment, it was determined that the number of family physician is inadequate. In order to carry out the procedures and tasks stated in activity standards in 10 selected provinces, required number of

family physician is calculated as 8,642, there is a need for 5,135 family physicians. The workload ratio is found out as 0.41 which means family physicians have a heavy workload.

**Conclusion:** Quantitative deficiency of family physician number will make difficulties in fulfilling the duties in the legislation in force. The workload of family physicians should be reduced by providing the ideal population per family physician or task shifting of some services that the physician was not required, to family health officer or an another health worker.

**Keywords:** Family physician, health workforce, workload  
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## İŞ YÜKÜNE DAYALI PERSONEL İHTİYACI BELİRLEME YÖNTEMİ İLE TÜRKİYE'DE AİLE HEKİMİ İHTİYACININ SAPTANMASI

### ÖZET

**Amaç:** Bu çalışmanın amacı iş yüküne dayalı sağlık personeli ihtiyacı belirleme yöntemiyle Türkiye'de aile hekimi ihtiyacının saptanmasıdır.

**Materyal ve Metot:** Çalışmada, Türkiye'nin farklı bölgelerinden seçilmiş 10 ilde çalışan 3.507 aile hekiminin mevzuatta belirtilen görevleri kapsamında 2011 yılında ürettikleri hizmetlerin verileri kullanılmıştır.

**Bulgular:** Hesaplamalar sonrası aile hekimi sayısının yeterli olmadığı belirlenmiştir. Seçilen 10 ilde,

aktivite standartlarında belirtilen iş ve işlemleri yerine getirebilmeleri için gerekli aile hekimi sayısı 8.642 olarak hesaplanmıştır. Bu hesaplama göre 5.135 aile hekimine daha ihtiyaç vardır. İş yükü oranı 0,41 olan aile hekimlerinin ağır iş yükü olduğu saptanmıştır.

**Sonuç:** Aile hekimi sayısındaki niceliksel yetersizlik, yürürlükteki mevzuatta yer alan görevlerini yerine getirmede zorluk yaratacaktır. İdeal olan aile hekimi başına düşen nüfus sayısının sağlanması, bunun yapılamadığı durumda ise hekim zorunluluğu olmayan hizmetlerin aile sağlığı elemanı veya diğer sağlık personeli tarafından verilmesinin sağlanması yoluyla (görev devri) aile hekiminin iş yükü azaltılmalıdır.

**Anahtar kelimeler:** Aile hekimi, sağlık insan gücü, iş yükü  
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## INTRODUCTION

The health workforce consists of public, private and/or voluntary healthcare personnel in a manner that meet the public health need. Disease prevention and treatment success are positively associated with the healthcare personnel's quantitative and qualitative proficiency.<sup>1</sup> Health workforce has become an important subject in public health and health policy areas, hence becoming a main theme of the World Health Organization (WHO) 2006 World Health Report.<sup>1</sup>

As in each sector, the objective of human resources for health management is to provide sufficient number of people with the right skills at satisfactory wage in suitable work fields as to acquire right work outputs.<sup>2</sup> On the one hand human resources in health are limited and there is a growing need, on the other hand demand and a variety of healthcare services are increasing. As a result, there becomes more severe requirement for planning in this specific sector. Health workforce planning should be made by a strategic approach through taking into account the needs and utilization of the public in accordance within the bounds of aims, objectives and the possibilities of health institutions while having healthcare personnel are recruited by their sufficient quantity, high quality, with a right distribution, an accurate timing, and full employment.<sup>3</sup> Generally 4 different methods are used in the planning of human power in health. These are; the workforce-to-population ratio method, the health needs method, the service demands method and the service targets method.<sup>4</sup> In the health needs method, future health workforce needs are estimated by determining the community healthcare needs by this method, different population groups' health care utilization rates are used, and data is analyzed by taking into account multiple variables.<sup>5</sup> The health needs method defined by WHO in 1980, is starting to be used as workload based in recent years.<sup>6</sup> Workload Indicators of Staffing Need (WISN) which is the specific type of the health needs method constitute the method of this study.<sup>2</sup>

In the literature, there are various studies conducted using WISN method. These studies are aimed determination of personnel need of preventive and treatment services, and supportive services such as health education, hospital nutrition services in institutions providing different stages of health services.

By "Health Transformation Program", initiated in Turkey from the year 2003, population based community health center system was transformed into the family medicine system within the provision of primary health care services. In 2005, a pilot

implementation of family medicine was first initiated in Düzce province and expanded to the whole country by the end of 2010.<sup>7</sup> The aim of this study was to determinate the need for family physicians in Turkey by using family medicine service data gathered from 10 different provinces selected from various regions of Turkey.

## MATERIAL AND METHOD

WISN is a tool that can calculate how many health workers of a particular type are required to cope with the workload of a given health facility. According to this method, the difference between actual and calculated (required) number of personnel shows the level of staff shortage or surplus. Also in accordance with "actual personnel/required personnel" ratio, workload pressure can be measured.<sup>2</sup> This method is revised and updated in 2008 by WHO while it was published in 1998, via conducting different field studies in various countries by the end of 1990's.<sup>2,8</sup> This study was conducted within 6 steps which are in accordance with the updated version.<sup>2</sup>

### Determining the provinces for the study

While determining the provinces for the study it was aimed to take into consideration the geographical differences of the country and some of the factors that might affect the health care services. Firstly, the provinces are grouped by considering some characteristics such as development level, geographical and population characteristics of provinces, density of mobile services and having tourism or industrial regions. After completion of the grouping, the provinces which would take place in the survey were selected randomly. The selected provinces were: Antalya, Bolu, Çankırı, Erzurum, Gaziantep, İzmir, Kocaeli, Kütahya, Van and Zonguldak. Data for the services provided by all family physicians in these provinces are evaluated. Data was gathered from Family Medicine Information System (FMIS) as to cover year 2011.

### Estimating available working time (AWT)

Annual working days of family medicines are calculated by excluding annual total off days, holidays etc. In the year 2011 study was conducted, there were 10 days of public holidays, 20 days of annual leaves for every family physician, 5 days of sick leaves and 104 days of weekends. By this calculation, AWT is 226 days.

Within the scope of Family Medicine Law, Family Medicine Implementation Regulation and Regulation

on Payment to be made to Personnel Affiliated to the Ministry of Health in the Scope of Family Medicine Implementation, and Principles and Procedures of the Contract, family physicians work minimum 40 hours a week in accordance with the full-time employment principle.<sup>9-11</sup> Working hours for 5 working days a week is determined as 8 hours.

### **Defining workload components and setting activity standards**

An activity standard is the time necessary for a well-trained, skilled and motivated worker to perform an activity to professional standards in the local circumstances. Activity standards were reviewed in 2 groups as service standards and allowance standards.

#### **Service standards**

These are the main activities of personnel during their service provision. These are performed by all members of the staff category. Regular statistics are collected on them. They can be expressed in 1 of 2 ways. The first is as unit time. This is the average time that a health worker needs to perform the activity. The second is as rate of working. This is the average number of activities completed within a defined time period.

#### **Allowance standards**

Allowance standards are the activity standards for support and additional activities. Regular statistics are not collected on them. Allowance standards can be expressed either as actual working time or as a percentage of working time. They are in 2 types:

Category allowance standards (CAS): Support or additional activities performed by all members of the staff cadre.

Individual allowance standards (IAS): Support or additional activities performed by certain members of the staff cadre activities.

In order to determine activity standards and calculate unit times and rates of working for these determined standards, an expert group was consisted of the authorities from the Ministry of Health and 17 family physicians selected from 10 provinces. Along with evaluating service referred in Family Physician job definition according to Family Medicine Law and Family Medicine Implementation Regulation; Family physicians in this workshop also shared their individual experience with their study group members. While determining activity standards, activities the largest part of the workload was taken.

Study group calculated times spent for workload determined by dividing into two different groups. An average is calculated through this time and thus a time unit and rates of working are created.

### **Establishing standard workloads**

Service standards are transformed into the same unit since they are represented by time units or rates of working. Common unit used in this method is "Standard Workload". A standard workload is the amount of work within a health service workload component that 1 health worker can do in a year.<sup>2</sup> In this study, Standard workload was established for each workload component in the health service activity group.

### **Calculating allowance factors**

There are two types of factors as category and individual allowance factors.

#### **Category allowance factor (CAF)**

The category allowance factor (CAF) is a multiplier that is used to calculate the total number of health workers, required for both health service and support activities. For each category allowance standard, time units need to be converted into ratios.

"Total CAS" is found by accumulating addition of all CASs. The CAF is found via dividing the Total CAS by 100 and then subtracting from 1 and finally dividing 1 by the answer.

#### **Individual allowance factor (IAF)**

The individual allowance factor (IAF) is the staff requirement to cover additional activities of certain cadre members. The IAF shows how many full-time equivalent staff members (or what proportion of such a staff member's time) are needed to cover the time commitment of certain cadre members to additional activities. The IAF is not a multiplier. Instead, it is added to the total required number of staff members in the final WISN step.

By the addition of all IASs, "Total IAS" is calculated. To calculate IAF, the annual total IAS is divided by AWT. You should be careful to use the same units for all variables.

### **Determining staff requirements based on WISN**

For determining the FP requirements, the total number of required FP for service standards is

**Table 1.** Number of family physicians, total population and population per family physician of selected provinces.\*

Province	Number of family physicians	Total population	Population per family physician
Antalya	547	1,978,637	3,617
Bolu	82	283,402	3,456
Çankırı	46	159,353	3,464
Erzurum	233	782,471	3,358
Gaziantep	453	1,712,968	3,781
İzmir	1,124	3,920,310	3,487
Kocaeli	420	1,559,488	3,713
Kütahya	173	560,806	3,242
Van	255	904,130	3,546
Zonguldak	174	607,662	3,492
TOTAL	3,507	12,469,227	3,555

\*: Data were taken from Family Medicine Information System.

**Table 2.** Service standards, unit time of service standards and annual activity numbers for family physicians.

Service Standards	Unit Time	Annual activity number
Outpatient clinic visit (patient examination)	9 min / visit	48,753,192
Tracking of personal information form*	5 min /population	12,469,227
Minor surgical procedure	20 min / visit	403,875
Chronic disease follow-up	4 min /visit	1,008,867
Pregnancy medical follow-up	15 min /visit	572,066
Infant growth and development monitoring	5 min / visit	826,527
Puerperal follow-up	5min / visit	300,387
Monitoring of women aged 15-49	5 min / visit	2,882,971

\*: Personal Information form tracking is carried out for family physician population once a year.

multiplied by CAF and then this result is added up IAF for all physicians.

In this method, results are analyzed by two ways. The first way is comparing the “Difference” between current and required staffing levels. This difference indicates staff shortage or surplus to carry out the activity standards. The second way is the examination of the “Ratio” of current and required staffing levels. By using this ratio, decision-makers can assess the work pressure of health workers in their daily work. If we take ratio=1, then current personnel are fully sufficient for covering workload stated activity standards above. If the ratio is <1, there is a staff shortage or if the ratio is >1 there is a staff surplus for covering this work load.

### Data analysis

Data was inputted to The Workload Indicators of Staffing Need (WISN, PROGNOZ Ins., Belgium)

software, and workload based staffing needs calculations were made via this program.

### Permissions and ethical issues

This study was conducted within the scope of the Year 2011 Work Plan of the Ministry of Health and the participants of the study group were informed about the aims of the study before the workshop.

### RESULTS

Number of family physicians, population per family physician, and population in provinces included in the study are shown in Table 1. The total population of the 10 provinces is 12,469,227 (approximately 16% of total country population), number of working family physicians is 3,507 (approximately 17% of total family physicians). While İzmir is the most populated city with 3,920,310, Çankırı has the least population with 159,353. Directly proportional to the population density, 1,124 family physicians work in İzmir and 46 of which work in Çankırı. Family physicians in Kocaeli and Gaziantep have the largest and Kütahya and Erzurum have the smallest population in terms of population per family physician (Table 1).

Taking unit time and rate of working into consideration which are determined by expert group; it is observed that a family physician spends 9 minutes per patient examination, 5 minutes for tracking of personal information form (PIF), 20 minutes for a minor surgical procedure, 4 minutes for a chronic disease follow-up, 15 minutes for a pregnancy medical follow-up visit, 5 minutes for infant growth and development monitoring, 5 minutes for puerperal follow-up and 5 minutes for monitoring of women 15-49 years old. Within the scope of service standards, above 48 million patients were examined in 2011, around 12.5 millions PIFs were tracked, 403,875 minor surgical procedures were made. Amongst the follow ups counted as other important service standards of family physicians, chronic disease follow-up is above 1 million, pregnancy medical follow-up is 572,066, infant and growth and development monitoring is 826,527, puerperal follow-up is 300,387, 15-49 years old women monitoring is around 2.9 million (Table 2).

In accordance with the expert group assessment, a family physician attends in-service trainings for 6 days in 1 year. In 1 month, family physician provides health education to his/her own personnel for 1 hour, he/she takes charge in forensic medicine duties for 6 hours and in performing statistics he/she needs to collect. It was determined that 3 hours are needed to provide mobile

services in rural areas and 30 minutes are needed to coordinate referral procedures of a patient to a higher level health care institution. Additionally, each family physician spends 1 hour a day for administrative and managerial assignments (Table 3).

Times determined for individual allowance standards which family physicians do in case of they are charged, are as following: 2 hours a month for communicable disease investigation practices, 6 hours a week for onsite health care service provided to public living spaces such as prison, reformatory school, nursing home, nursery where children in need of care and protection sheltered, and orphanage, 4 hours a month for Family Health Center (FHC) general administrative affairs, 2 hours a month for attending the commissions where physician is charged by Provincial Directorate of Health and/or Directorate of Public Health, 15 minutes a day for cold chain responsibility where physician is responsible for transporting, stocking and implementation of vaccines; 1 hour a week for supplying of materials for FHCs (Table 3).

In order to carry out the procedures and tasks stated in activity standards in 10 selected provinces, required number of family physician is calculated as 8,642. The difference between required number and current number of family physician is calculated as -5,135. In other words, in order to fully accomplish the activity standards, there is a need for 5,135 family physicians. In the calculations, the ratio is found out as 0.41. Ratio below 1 indicates there are an insufficient number of family physicians and the work load pressure is intense. The current population per family physician is 3,555 in 10 provinces included in the study. The calculated population per family physician is 1,442 (Table 4).

Except from category and individual allowance standards, when only service standard calculations are taken into account, it is indicated that 4,995 family physicians are required to carry out refereed tasks. The family physician gap is found out 1,488, and workforce ratio is 0.70. These services become possible when 1 family physician is employed per 2,500 people. If we do the same calculation for only outpatient clinic visits, it is indicated that there is a need for 4,045 family physicians and 538 more family physicians should be recruited in order to reach this number. Workforce ratio is calculated as 0.87 and population per family physician is 3,083 people (Table 4).

## DISCUSSION

The health care service is a labor-intensive industry. From knowledge to the implementation of health care services, it is a people oriented service. On that basis,

**Table 3.** Allowance standards and rate of working for family physicians.

Allowance standards	Unit time/ Rate of working
<b>Category allowance standards*</b>	
Attending in-service trainings	6 days / year
Providing health education to staff	1 hour / month
Forensic medicine duties	6 hours / month
Management and administrative assignments	1 hour / day
Mobile services	3 hours / week
Patient referral coordination	30 min / week
Performing statistical assignments	3 hours / month
<b>Individual allowance standards*</b>	
Communicable disease investigation practice	2 hours / month
Onsite healthcare service	6 hours / week
Family health center general administrative affairs	4 hours / week
Attending the commission meeting	2 hours / month
Cold chain responsibility	15 min / day
Supplying of materials	1 hours / week

\*: Categorical and individual allowance standards are valid for 1 physician.

**Table 4.** The current situation and required number of family physicians, differences and ratios of between current and required staffing levels, and population per family physician.

	FP Number	Difference	Ratio	Population per FP	
<b>Current Situation</b>		3,507	-	-3,555	
<b>WISN results</b>	<b>For all activity standards</b>	8,642	-5,135	0.41	1,442
	<b>For only service standards</b>	4,995	-1,488	0.70	2,496
	<b>For only outpatient clinic visits</b>	4,045	-538	0.87	3,083

FP: Family physician, WISN: Workload indicators of staffing need

planning, training and management of the health workforce are important so as to ensure the “state of complete physical, mental and social well-being”, which is the definition of health WHO defined.<sup>1</sup>

Because the WISN can be provided by already collected and accessible data, the method is easier to use than the other methods. Among the advantages of this method are it’s simple to operate, applicable for staffing decisions at all healthcare service levels, technically acceptable to healthcare service managers and comprehensible to managers without a medical background. The other advantage is the method is realistic, providing practical targets for budgeting and resource allocation.<sup>2</sup> There are studies in the literature where this method has been used, for all healthcare service levels, for specific types of staff, or for a certain type of service.<sup>12-19</sup>

There are also studies where the primary health care services have been evaluated with this method.

Preventive and primary care services were evaluated in a study conducted in Papua New Guinea, and it was concluded that there were differences in staff distribution, that while in a health center the workload was 2.5 times heavier, in another the workload pressure was only 6%.<sup>20</sup> In a research conducted in South Africa the staffs in the primary healthcare services were quantitatively evaluated. It was ascertained that the current number of physicians covered only 7% of the required physician number, only 60% of the required number of nurses were employed, there were major differences between the regions in terms of staff distribution, and there were inabilities in terms of staff use.<sup>21</sup> There are also studies evaluating the maternal and child health and family planning services in Tanzania, Mozambique and India with a more specific approach than the primary health care services.<sup>22-25</sup> In the first of two studies conducted in Indonesia, the aim was to find out number of physicians, nurses, midwives and laboratory workers required in general examination, oral and dental care, pediatric units and laboratory services in primary health care centers in the Merdeka region.<sup>26</sup> In another study conducted in Indonesia in 2010, the workload and the required staff number were determined with the WISN method in primary health care centers.<sup>27</sup>

Of the use of this method in family medicine practices, a study was encountered in the literature which was conducted in Brazil. In Brazil, where the implementation of family medicine practices started in 1994, it was discovered that there were 1,000 families (3,000-4,000 people) for 1 family physician/community physician, 1 nurse, 1 assistant nurse, and 4-6 community health officers. In this study, which the WISN used for workforce planning in 2008, it was found that there was a 23% shortage of family physician.<sup>28</sup>

The WISN method has been used in some studies conducted in Turkey as well. In a study published in 2012, the need for and distribution of pathologists in Turkey was evaluated.<sup>3</sup> In another study, the applicability of the method at hospitals was tested.<sup>29</sup> A publication evaluating the primary health care services in Turkey with the WISN method was not found in the literature. However the number of provinces included in this study is 10, the total population in these provinces is close to 12.5 million. The total population of the provinces corresponds to one sixth of Turkey's population in 2011.<sup>30</sup> The provinces were selected from different regions of Turkey with regard to rural/urban population rate in the country.

The population per family physician in the provinces is between 3,242 and 3,781. According to the 2011 data by the Ministry of Health, the average number of the population per 1 family physician is 3,696.<sup>31</sup> The effects on the population per family physician of the various living and working conditions in the provinces and their differences in terms of urban, rural and industrial areas can be researched in further studies.

According to the analysis results, to fulfill all the activity standards, the number of population connected to a family physician should be 1,442 people. While there is 1 family physician for 3,200 people in the USA, in Cuba this number is 600 people, in Canada this number is 1,020 people, in Qatar 949 people, in the Netherlands 2,300 people, in Denmark 1,600 people, and in United Kingdom 1,800 people.<sup>32-35</sup> One of the goals of the Ministry of Health for 2023 is to bring down the number of the people per family physician to 2,000.<sup>36</sup>

After the calculations made, it was discovered that there is a need for 2.5 times more family physicians than the current number to perform their duties as stated in the legislation. In the 10 provinces included in the study, there is a need for an additional 5,135 family physicians to meet the needs sufficiently. When it can be foreseen that there is a need for 1 family physician for every 1,442 people in Turkey, where the population is 74,724,269 according to the Address-based Population Registration System, 51,820 family physicians are required to provide the FHC services.<sup>30</sup>

The number of annual performing activities was used for service standards, and the unit time or rate of working determined by the expert group was used for allowance standards in the calculations. The need for family physician calculated for service standards is more objective than the need calculated for allowance standards. There is a need for 5,000 family physicians for only the activities stated in service standards. In addition to the number of family physicians working in the selected provinces, 1,500 more family physicians should be employed (30% staff shortage) to attain this number. According to this calculation, there should be employed 1 family physician per 2,500 people.

It was found that the outpatient clinic visits constitute 80% of the workload of family physicians, in a study carried out in Manisa, Turkey. And also it was found that family physicians examine approximately 60 patients daily in that study.<sup>37</sup> The outpatient clinic visit time varies according to the

patients' age, gender, whether they have a special condition such as pregnancy, type of disease, the depth of medical history received, review of systems and the type of examination.<sup>37,38</sup> At the least 10 minutes are required for taking a brief medical history and performing a targeted physical examination.<sup>39</sup> However, this amount of time might go up to over 1 hour if an in-depth medical history is taken, systems are reviewed, there are more than 1 health problem, and/or a detailed family history is assessed.<sup>40</sup> According to some resources, the time required for a family physician to take the medical history and examine the patient should be at least 30 minutes.<sup>41</sup> The 9 minutes agreed in the study is quite optimistic. When the unit time for family physicians to perform an examination was considered "9 minutes", it was found out that 4,045 family physicians would be needed for only nearly 49 million examinations in the areas included in the study. By this conclusion, even if all the other tasks and duties are considered to be performed by the family medicine staff in the total working time per annum, the family physician cannot provide outpatient clinic services in accordance with the standards specified.

Apart from the activity standards included in the calculation, there are also other service standards such as the new patient registration, home visit to new patient, patient observations, home health care services, blood pressure follow-ups, and application of the intrauterine device. Moreover, directly observed therapy (DOT) for tuberculosis and other assignments are also among the allowance standards as services provided by the family physician. These services were not included in the calculations used in this study. If they were included, the calculated need for family physicians would increase more. However, it is stated in the manual that using only the most commonly performed 4 or 5 activity standards is enough for the calculations, and rarely made allowance standards may be excluded from the calculations.<sup>2</sup>

Some limitations should be taken into consideration while assessing the results of the study. The annual service statistics are used to calculate the workload. Therefore, the accuracy of this method is directly linked to the accuracy of the statistics. If the health institutions do not keep their records well enough, the results of the method will be inappropriate. The details of the records regarding the tasks performed and the staff in the institution will affect the method-based decision making mechanisms. Because the data from last year are

used, a retrospective calculation is made in the study. When necessary, there could be a need for correction in the percentages calculated. When the deficiencies from previous years are later removed, the calculated number of staffing need could be insufficient against the workload.<sup>2</sup> The data of the research were taken from the FMIS database, the main information system in the family medicine system of the Ministry of Health. Because there have not been significant structural changes in the family medicine system since 2011, it was concluded that there would not be such an effect on the findings of the research.

In this study WISN method, created by WHO and utilized in health workforce planning in respect of different institutions and personnel types in various countries of the world, is used in determining family physician need in selected provinces of Turkey. WISN is the one of the methods used for human resources planning and improving the management. It will form stronger human resources systems, even if this method is used together with the other human resources related tools.

After calculations, an insufficiency is identified in the number of family physicians. In this situation, family physicians have difficulty in carrying out their duties stated in legislations. Family physicians' fails to properly fulfil their duties may adversely affect community health outcomes.

Wensing et al. conducted a cross-sectional study in general practices to determine the impact of practice size and scope of services on average physician workload in primary care practices in The Netherlands. They found that delegation of medical tasks was associated with reduced physician workload per 1000 patients, mainly in smaller practices, and with higher assistant volume per 1000 patients, particularly in larger practices. They propose that in large practices, medical tasks were delegated to practice assistants to provide a wider scope of disease management services and in small practice to reduce average physician workload.<sup>42</sup>

While family physician staffing need should be covered in a short time, ideal population per family physician number should be cached. By this manner, the quality of services will improve in FHC where personal preventive health care services and primary care services are rendered, and an improvement is provided in public health outcomes.<sup>1</sup> In the case of inability of short-term

improvement in the number of family physicians, it should be thought about that services, provided by family physicians, but that there are not a necessity of physician in terms of providing services, can be rendered by family health personnel task shifting or other types of personnel to be recruited. This would both enable physician to work more efficiently and services to be provided timely and with quality. Also, it was thought that this is a more

cost-efficient method in terms of staff education, salary etc.

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<b>C</b>	<b>CORRESPONDING AUTHOR:</b> Bakı Can Metin Hacettepe Üniversitesi Tıp Fakültesi Halk Sağlığı AD 06100, Sıhhiye, Ankara, Turkey. <a href="mailto:bcanmetin@gmail.com">bcanmetin@gmail.com</a>
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## REFERENCES

- World Health Organization. World Health Report 2006: Working Together for Health. Geneva, Switzerland: World Health Organization; 2006.
- World Health Organization. Workload Indicators of Staffing Need, User's Manual. Geneva, Switzerland: World Health Organization; 2010.
- Üner S, Usubütün A. Study of Need Recognition with Workload Based Staffing Need Estimation Method: Efficacy and Distribution of Pathologists in Turkey [article in Turkish with an abstract in English]. *Türkiye Klinikleri J Med Sci* 2012; 32: 715-725.
- Güler Ç, Akin L. Halk Sağlığı Temel Bilgiler, 2nd ed. Ankara, Turkey: Hacettepe University Publications; 2012.
- Ministry of Health and Turkish Council of Higher Education. Türkiye Sağlık İnsan Gücü Durum Raporu. Ankara, Turkey: Ministry of Health Publications; 2008.
- Bayındır Ü, Durak Hİ. Türkiye'de Tıp-Sağlık Bilimleri Alanında Eğitim ve İnsan Gücü Planlaması: Mevcut durum ve 2013 yılı vizyonu. Ankara, Turkey. Presidency of Council of Medical and Health Sciences Education, Head of Inter-university Council; 2008.
- Akdağ R. Health Transformation Program in Turkey. Ankara, Turkey: Ministry of Health Publication; 2010.
- Shipp PJ. Workload indicators of staffing need (WISN): a manual for implementation. Geneva, Switzerland: World Health Organization, Division of Human Resources; 1998.
- Family Medicine Law. No: 5258 Official Gazette date and number: 09.12.2004, 25665.
- Family Medicine Implementation Regulation, Official Gazette date and number: 25.01.2013, 28539.
- Regulation on Payment to be made to Personnel Affiliated to the Ministry of Health in the Scope of Family Medicine Implementation, and Principles and Procedures of the Contract, Official Gazette date and number: 30.12.2010, 27801.
- Hossain B, Alam SA. Likely benefit of using workload indicators of staffing need (WISN) for human resources management and planning in the health sector of Bangladesh. *Human Resources for Health Development Journal* 1999; 3: 99-111.
- Musau P, Nyongesa P, Shikhule A, et al. Workload indicators of staffing need method in determining optimal staffing levels at Moi Teaching and Referral Hospital. *E Afr Med J* 2008; 85: 232-239.
- Namaganda G. Testing the WISN method in Mbale and Mukono Districts, Uganda, 2006. In: WHO, Applying The WISN Method in Practice, Case Studies from Indonesia, Mozambique and Uganda. Geneva, Switzerland: WHO Publications; 2010. pp. 18-23.
- Mugisha JF, Namaganda G. Using the workload indicator of staffing needs (WISN) methodology to assess work pressure among the nursing staff of Lacor Hospital. *Health Policy and Development* 2008; 6: 1-15.
- Nyamtema AS, Urasa DP, Massawe S, et al. Staffing Needs for Quality Perinatal Care in Tanzania. *Afr J Reprod Health* 2008; 12: 113-124.
- Ktena SH. Effective scheduling of hospital personnel needs through forecasting daily emergency admissions. MSc, National Technical University of Athens, Athens, Greece, 2012.
- Jonathan K. Workload-based indicators of staffing need (WISN) for health tutors in two public health training institutions in Uganda. *Health Policy and Development* 2008; 6: 16-30.
- Suharyono MW, Adisasmito WBB. Analysis of the optimal number of support staff needed using work sampling in the nutritional service unit [article in Indonesian with an abstract in English]. *Jurnal Manajemen Pelayanan Kesehatan* 2006; 9: 72-79.
- Inder B, Spinks J, Srivastava P, Sweeney R. Papua New Guinea: Modeling costs and efficiency of primary health care services in Papua New Guinea. Victoria, Australia: Centre for Health Economics, Monash University; 2011.
- Daviaud E, Chopra M. How much is not enough? Human resources requirements for primary health care: a case study from South Africa. *B World Health Organ* 2008; 86: 46-51.
- Simba D, Kamwela J, Mpembeni R, Msamanga G. The impact of scaling-up prevention of mother-to-child transmission (PMTCT) of HIV infection on the human resource requirement: the need to go beyond numbers. *Int J Health Plan M* 2010; 25: 17-29.
- Vio F, Cumbi A, Rodriguez AP, Gimbel-Sherr K, Dreesch N. Service delivery units: a shortcut to calculate workload indicators in Mozambique? In: Haddad AE, Viana ALD, Pierantoni CR, Vianna CMM, Campos FE, Poz MRD, Brenelli SL, editors. *O Trabalho Em Saúde: Abordagens Quantitativas E Qualitativas*. Rio de Janeiro, Brazil: Centro de Estudos e Pesquisa em Saúde Coletiva; 2011. pp. 69-89.
- Vio F. Applying the WISN method in Nampula and Sofala Provinces, Mozambique, 2004. In: WHO, Applying The WISN Method in Practice, Case Studies from Indonesia, Mozambique and Uganda. Geneva, Switzerland: WHO Publications; 2010. pp. 10-17.
- Hagopian A, Mohanty MK, Das A, House PJ. Applying WHO's 'workforce indicators of staffing need' (WISN) method to calculate the health worker requirements for India's maternal and child health service guarantees in Orissa State. *Health Policy Plann* 2012; 27: 11-18.
- Saputri VW, Misnaniarti M, Ainy A. Perencanaan kebutuhan sumber daya manusia kesehatan dengan metode workload indicators of staffing need (WISN) di puskesmas merdeka kota Palembang tahun 2009 [article in Indonesian with an abstract in English]. *Jurnal Ilmu Kesehatan Masyarakat* 2009; 1: 58-66.
- Seran SB, Kromoredjo P, Kolehmainen-Aitken RL, Smith J, Darmawan J. Decentralized application of the WISN method in Nusa Tenggara Timur (NTT) Province, Indonesia, 2008. In: WHO, Applying The WISN Method in Practice, Case Studies from Indonesia, Mozambique and Uganda. Geneva, Switzerland: WHO Publications; 2010. pp. 1-9.
- Pierantoni CR, Varella TC, Dos Santos MR, Da Silva LL. Workload indicators for the family health professionals' strategy [article in Portuguese with an abstract in English]. *International Conference*



- on Research in Human Resources for Health; 9-11 June 2010; Rio de Janeiro, Brazil: PAHO/WHO Collaborating Center for Health Workforce Planning and Information; 2010.
29. Ozcan S, Hornby P. Determining hospital workforce requirements: a case study. *Human Resources for Health Development Journal* 1999; 3: 210-220.
  30. Turkish Statistical Institute. The results of Address Based Population Registration System, 2011. 21 January 2014 <http://www.turkstat.gov.tr/PreHaberBultenleri.do?id=10736>.
  31. Turkish Republic Ministry of Health, General Directorate of Health Research. *Health Statistics Yearbook 2011*. Ankara, Turkey: Ministry of Health Publications; 2012.
  32. Dresang LT, Brebick L, Murrmonth D, Shallue A, Sullivan-Vedder L. Family medicine in Cuba: community-oriented primary care and complementary and alternative medicine. *J Am Board Fam Med* 2005; 18: 297-303.
  33. Gladu FP. Perceived shortage of family doctors in Quebec: can we do something about it? *Can Fam Physician* 2007; 53: 1858-1860.
  34. Bener A, Al Mazroei A. Health Services Management in Qatar. *Croat Med J* 2010; 51: 85-88.
  35. Korukluoğlu S, Üstü Y, Kasım İ, Doğusan AR, Hacıımamağaoğlu A. Organization in the New Period. Editor: Aydın S. *Family Medicine: The Turkish Model*, 1st ed. Ankara: Published by Ministry of Health of Turkey. Ankara: Çetin Ofset; 2006.
  36. Üstü Y, Uğurlu M, Eğici T, Yıldırım O, Örnek M. Aile Hekimliği Uygulamasında Güncel Problemler Ve Çözüm Yolları-I [article in Turkish]. *Ankara Med J* 2011; 21: 50-54.
  37. Tay Z, Tuncal AN, Atasoylu G, Sertel M, Köroğlu G. Manisa ilinde aile hekimlerinin 2011 yılındaki işyükü ve insan gücünün değerlendirilmesi [article in Turkish]. *Türk Aile Hek Derg* 2014; 18: 5-15.
  38. US Department of Health and Human Services. *Evaluation and Management Services Guide*. USA: Department of Health and Human Services; 2010.
  39. Heidelbaugh JJ, Habetler JM. 10 billing and coding tips to boost your reimbursement: keep more of what you earn by avoiding these costly coding missteps. *J Fam Practice* 2008; 57: 724-730.
  40. Ontario Ministry of Health and Long Term Care. *Schedule of Benefits for Physician Services under the Health Insurance Act*. Ontario, Canada: Ministry of Health and Long Term Care; 2013.
  41. Cadogan M, Brown AFT, Celenza A. *Marshall and Ruedy's on Call Principles and Protocols*. 2nd ed. NSW, Australia: Elsevier; 2011.
  42. Wensing M, Van Der Hombergh P, Akkermans R, Van Doremalen J, Grol R. Physician workload in primary care: What is the optimal size of practices? A cross-sectional study. *Health Policy* 2006; 260-267.