

Health Staff Motivation in Eastern Europe: The Evidence from Ukraine

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Abstract

In this paper we build the model of a typical Ukrainian health worker in order to find out factors which motivate and demotivate health staff to work efficiently in Ukraine. Besides, we aim at finding out the strength of health workers' motivation towards continuous education and the level of their moral and financial job satisfaction. The study is based on the results of the health staff survey carried out by the author in 2006 in Ukrainian public hospitals. The questionnaire contains 21 items designed to analyze health workers' personal and professional life profiles. For processing the survey results some econometric methods are used. The analysis shows that among the crucial factors which motivate health staff to work efficiently in Ukraine are awareness of how important the work is, love for work and opportunities for professional knowledge and skills realization. At the same time health staff are demotivated by poor remuneration, weak connection between work outcomes and salaries, poor working conditions. The research shows that a typical Ukrainian health worker receives moral job satisfaction (to some extent) and does not receive financial job satisfaction. In order to overcome such negative tendencies we propose to implement the new remuneration system in public hospitals and activate a number of incentives at national, regional, organizational and individual levels.

Keywords: motivation, health staff, remuneration, incentive, efficiency, job satisfaction, professional education

I. Introduction.

One of the most important preconditions of social and economic development of any country is the strong health of its population. The latter can be provided only by well-qualified and highly motivated health staff. However, in transitional countries, such as Ukraine, we can see totally unmotivated health workers who are not interested in continuous education and providing health services of high quality. Such situation is caused by the deformations in the health staff remuneration system, the lack of moral incentives towards work, poor working conditions and complete destruction of continuous education system. As a result, Ukraine experiences a deep contradiction between the necessity of high labour efficiency in the health care sector and low health staff motivation towards work. Consequences of such contradiction are reflected on population health. Hence, they concern priority interests of the whole society.

In spite of the importance of this issue almost nothing has been done to explore it. The majority of the studies concerning health staff motivation examine the situation mainly in developed countries. With respect to transitional countries this problem has not received a proper scientific attention. So, this paper aims to fill the gap in the literature by identifying broad trends in health staff motivation towards work in transitional economies (by the example of Ukraine).

The research is performed on the basis of the studies and data published in Ukraine and worldwide. Moreover, the questionnaire was worked out and the survey of health workers was conducted in order to determine the factors which make them work efficiently or inefficiently and find out the state of their motivation towards work and continuous education. Additionally, this paper determines the main policy issues which must be addressed in order to change the situation with health staff motivation in Ukraine for better.

The paper is structured as follows. Section II describes the literature concerning the problem. Section III provides the background of health staff motivation in transitional Ukraine. Section IV presents the data description and empirical evidence on trends in health staff motivation in Ukraine. Section V provides the estimation strategy for building the portrait of a typical Ukrainian health worker. The estimation results are represented in section VI. Section VII gives the conclusions and policy implications.

II. Literature.

The problem of health staff motivation towards work has always attracted the scientists' attention as it plays an important role in achieving health care efficiency. Hornby and Sidney (1988) noted that factors such as the availability of resources and the technical competence of the worker are not sufficient in themselves to provide desired work behavior. Evidence has shown that motivated workers come to work more regularly, work more diligently, more flexible and willing. Increased motivation creates the conditions for more effective workforce, but because work motivation is an interactive process between workers and their work environment, good management and supervision are still critical factors in reaching organizational goals.

So, in order to achieve high level of health care efficiency various factors affecting worker motivation must be taken into account (Franco et al., 2000). These factors were largely studied by Sara Bennett and Lynne Miller Franco (1999) who claimed that motivation originates at many levels: the individual, the immediate

organizational work context, the larger health sector context, and the socio-cultural and environmental context. According to their research results, some of the most important individual-level determinants of work motivation are workers' individual needs, self-concept and expectations of outcomes. These determinants coupled with individual worker's technical and intellectual capacity to perform and the physical resources at hand to carry out the task, lead to worker performance. Organizational structures, processes and culture, as well as information about organizational performance and results also contribute to the motivational processes occurring at the individual level. That is why it is necessary for the organization to provide complementary inputs (such as drugs and medical supplies), as well as clear, efficient systems, in order to make workers effectively carry out their tasks. Organizational structures and processes will affect workers' experience of outcomes and the nature of feedback that a worker receives from colleagues and supervisors within the health system. Outside of the immediate organizational environment, the broader social and cultural context will also contribute to the individual's motivation processes. At the core of health services delivery is the interaction between the individual health care worker and the client. Community members will have expectations for how services should be delivered, and they provide feedback on health worker performance too.

In another paper Lynne Miller Franco et al. (2000) noted that it is impossible to measure motivation directly. It is possible to measure inputs (or determinants) and the outcomes (job satisfaction) of the motivational process. Two countries (Jordan and Georgia) were chosen by them for the research. The study was based on the survey conducted by the specially designed questionnaire. The majority of items included in that questionnaire were withdrawn from the questionnaire used for surveying health staff in the USA. They covered the following issues: perception of hospital goals, attitudes towards hospital environment and culture, perception of characteristics of fellow workers, possible effects of different work conditions and interventions to improve motivation on performance.

Steven Simoens et al. (2002) tried to study trends in job satisfaction, intentions to quit and the retention of general practitioners in England and Scotland. It was admitted that demographic, job and practice characteristics influence general practitioners' job satisfaction which in turn shapes their intentions to quit.

A number of studies explored work motivation among different professional groups of health staff. Thus, Katryn Jenkins and David Wong (2001) surveyed Canadian anesthesiologists while Paul E. Garfinkel conducted the similar research among psychiatrists (2005). In the questionnaires worked out for those surveys questions concerning both motivation determinants and outcomes were included.

Though the issue of health staff motivation to work efficiently is being actively studied in well-developed countries it is still unexplored in transitional states, particularly in Ukraine. The existing studies concentrate on poor remuneration in the health care sector while other factors determining work motivation and job satisfaction are set aside.

So, this paper purports to shed the light on factors which motivate and demotivate health staff to work efficiently in Ukraine. Besides it aims at finding out the level of health workers moral and financial job satisfaction and determining the strength of their motivation towards continuous education.

III. Background.

Ukraine has a tax-based health system that is to provide universal coverage for all Ukrainian residents. According to the Constitution, all health services in Ukraine are free at the point of use.

Central government and the municipalities are the main players in the organization of health care in Ukraine. At the national level the Ministry of Health issues framework legislation on health policy and monitors its implementation. It also establishes the goals for national health policy, works out the principles of remuneration system, promotes the cooperation between different health care actors and provides health information. From their part municipalities organize health care at regional levels.

In 2003 Ukraine spent 5.7% of its gross domestic product (GDP) on health (World Health Report, 2006). In the same year per capita total expenditure on health was equal to 60 US\$. Public expenditure constituted 65.9% of total health expenditure while private 34%.

Almost all health workers in Ukraine are salaried government employees. At the same time they are allowed to practice privately and be compensated on fee-for-service method. The remuneration system of those who work in hospitals is based on the tariff scale (table 1).

Table 1. Tariff scale used for health staff remuneration in Ukraine

Basic tariffs	Adjustment coefficients	Official salaries, US \$	Coefficients growth		Official salaries growth, US \$
			Comparative	Absolute	
1	1,00	88,0	–	–	–
2	1,06	93,0	1,06	0,06	5,0
3	1,12	99,0	1,06	0,06	6,0
4	1,18	104,0	1,05	0,06	5,0
5	1,24	109,0	1,05	0,06	5,0
6	1,30	114,0	1,05	0,06	5,0
7	1,37	121,0	1,05	0,07	7,0
8	1,47	129,0	1,07	0,10	8,0
9	1,57	138,0	1,07	0,10	9,0
10	1,66	146,0	1,06	0,09	8,0
11	1,78	157,0	1,07	0,12	11,0
12	1,92	169,0	1,08	0,14	12,0
13	2,07	182,0	1,08	0,15	13,0
14	2,21	194,0	1,07	0,14	12,0
15	2,35	207,0	1,06	0,14	13,0
16	2,50	220,0	1,06	0,15	13,0
17	2,66	234,0	1,06	0,16	14,0
18	2,83	249,0	1,06	0,17	15,0
19	3,01	265,0	1,06	0,18	16,0
20	3,25	286,0	1,08	0,24	21,0
21	3,41	300,0	1,05	0,16	14,0
22	3,50	308,0	1,03	0,09	8,0
23	3,71	326,0	1,06	0,21	18,0
24	3,80	334,0	1,02	0,09	8,0
25	3,93	346,0	1,03	0,13	12,0

This tariff scale includes basic tariffs and adjustment coefficients which are supposed to reflect worker's duties complexity, level of education and working experience while his / her work outcomes are

entirely neglected. According to them, official salaries are set. There are also a number of additional payments connected with poor working conditions, working load, qualification, great achievements in work etc. But unfortunately, the principles which this remuneration system is founded on are out-of-date and they do not motivate health staff to carry out their tasks efficiently. Thus, the correlation between extreme basic tariffs (the 1st and the 25th) is 1:3.93 while it is scientifically proved that it must be equal to 1:6 – 1:6.5. Moreover, the susceptibility threshold (the ratio between two adjacent coefficients) in 10% is not kept. As a result, the range of adjustment coefficients corresponding to surgeons' positions is equal to 1:1.24 (2.21:1.78), nurses' positions – 1:1.28 (1.66:1.30), junior nurses' positions – 1:1.11 (1.24:1.12). In other words, an official salary of a surgeon can be raised only by 38 US \$ during his / her professional career while an official salary of a nurse or a junior nurse by 32 and 10 US \$ respectively. In addition to it, salary differentials in the health care sector are completely unfair. For instance, a typical physician who is given the 13th basic tariff receives an official salary which is higher than an official salary of a nurse only by 36–68\$ (table 2).

Table 2. Salary differentials in the health care sector in Ukraine

Position	Basic tariffs	Official salaries, US \$
Head physicians	14–18	194–249
Head nurses	10–12	146–169
Surgeons	11–14	157–194
Other physicians	10–13	146–182
Internship physicians	9–10	138–146
Nurses	6–10	114–146
Junior nurses	3–5	99–109

* The table is built according to the Ukrainian legislation

Another great drawback of the remuneration system in Ukrainian health care is low salaries. The data given by the Ukrainian Ministry of Statistics show that in 2005 an average statistical health worker received the salary amounting 104\$ (in other branches of industry it was equal to 160\$). Such remuneration does not correspond with the cost of living in Ukraine and puts health workers behind the poverty line.

It is worth noting that difficulties with overcoming these drawbacks can be partly explained by the imperfection of socio labor relations in Ukrainian health care as those who participate in the social dialogue process have deformed rights and duties. In particular, there are no appropriate employer organizations and their role in practice is played by the state. So, trade unions resist, collaborate and interact with the administration which is supposed to defend interests of the state. In such a way the state makes it impossible for trade unions to influence decision-making concerning labor issues in the health care sector.

IV. Data.

This study is based on the data from the health staff survey carried out by the author in 2006 in order to find out which incentives make health staff work efficiently in Ukrainian public hospitals. The questionnaire included 21 items which were designed to analyze health workers' personal and professional life. A random sample of 1047 health workers was selected from the total number of health staff. Of the respondents, 3.8%

were head physicians, 28.6% physicians, 38.6% nurses and 29% junior nurses. The youngest among the surveyed were junior nurses and nurses while the oldest – physicians and health physicians. Besides, more than 87% of the sample were women.

It is worth noting that although a half of the surveyed physicians has been working in the health care sector for 20 years only 36.3% of them have the highest level of proficiency (figure 1). Much worse is the situation with nurses' qualification as one out of three nurses has the lowest level of proficiency. Such situation is caused by the lack of incentives to continuous education. As we can see from figure 2, only 25.2% of the respondents think that managers support their professional development in a proper way.

Figure 1. The level of respondents' qualification, %

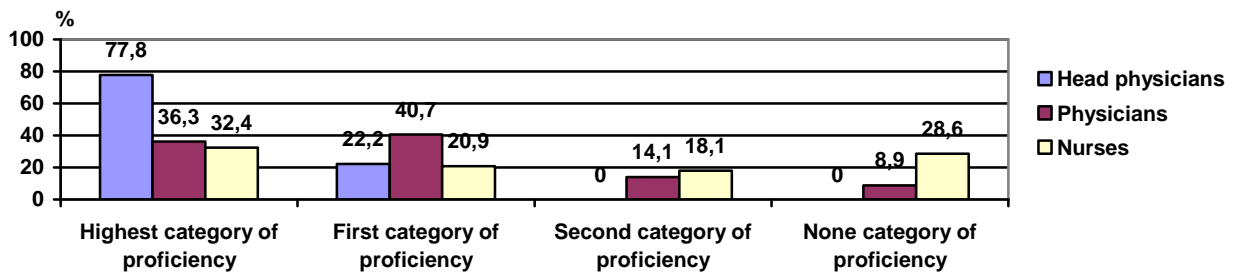
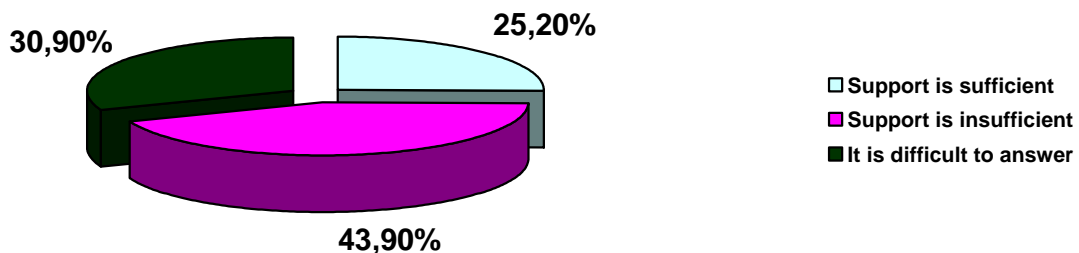


Figure 2. Financial and moral support of respondents' professional development by managers, %



According to the survey (figure 3), 30.2% of the respondents still experience the lack of financial resources and it is difficult for them to cover living expenses as the place of study is often far away from the place of work. But the main reason of health workers' poor professional knowledge is their unwillingness to study. They state that their salaries are low and their professional development is not accompanied by any changes in their income. As a result, during last year 35% of health workers did not enrich professional knowledge at all (figure 4). Low interest in studying among health staff leads to low interest in innovations. Of the surveyed, 53% do not see any necessity in innovative approach towards work.

Figure 3. Barriers in the way of continuous education in health care, %

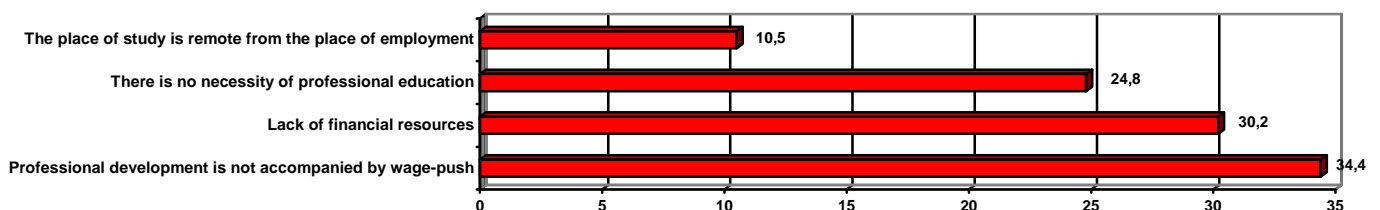


Figure 4. Methods of enriching professional knowledge which are the most popular with the health workers, %

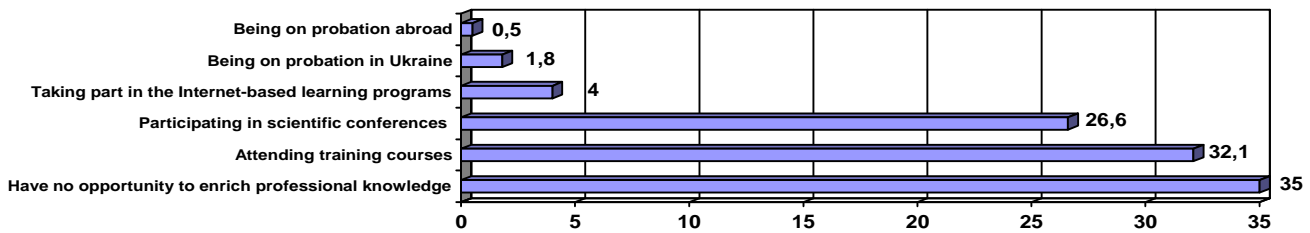


Table 3 shows that only one out of three respondents experiences moral job satisfaction. The highest level of satisfaction (80%) is among physicians while the lowest can be seen among junior nurses (42.3%). Much worse is the situation with financial job satisfaction (table 4). Only 1% of the respondents are fully financially satisfied with their jobs while about 88.5% state that their salaries are extremely low.

Table 3. Moral job satisfaction of the respondents, %

Health staff category	„Do you receive moral job satisfaction?“				
	Yes	Better yes than no	Better no than yes	No	It is difficult to answer
Head physicians	38,9	50,0	5,6	0,0	5,5
Physicians	43,7	36,3	7,4	5,2	7,4
Nurses	31,9	32,4	9,9	6,6	19,2
Junior nurses	24,8	17,5	19,7	16,7	21,3
Total	33,5	29,9	11,8	8,9	15,9

Table 4. Financial job satisfaction of the respondents, %

Health staff category	„Do you receive moral job satisfaction?“				
	Yes	Better yes than no	Better no than yes	No	It is difficult to answer
Head physicians	0,0	0,0	22,2	66,7	11,1
Physicians	0,0	3,7	23,0	68,9	4,4
Nurses	2,2	2,2	14,8	73,1	7,7
Junior nurses	0,7	3,6	13,9	71,5	10,3
Total	1,1	3,0	17,2	71,2	7,5

It comes as no surprise inasmuch as more than 99% of the health workers report that they experience financial difficulties: 59.5% have an opportunity to buy only food, 32.4% can also afford themselves to pay for public utilities and 7.4%, in addition to it, are able to purchase clothes and footwear (table 5). According to the respondents' estimations, an average monthly salary of a physician in Ukraine must be equal to 510–1000 US \$ while an average nurse or a junior nurse must receive about 160–390 US \$ per month in order to satisfy basic needs (table 6).

Table 5. The purchasing power of an average salary in health care (by the estimations of the respondents), %

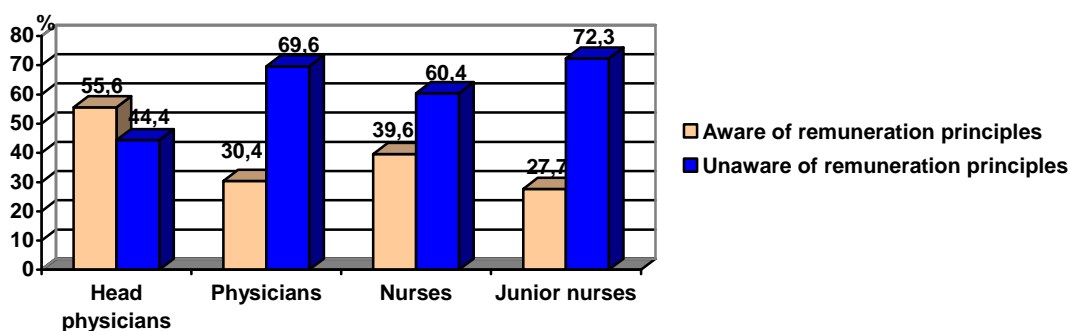
„How can you estimate the purchasing power of your salary ?”	Head physicians	Physicians	Nurses	Junior nurses	Total
It is enough for buying food	16,7	33,3	64,8	83,9	59,5
It is enough for buying food and paying for public utilities	33,3	47,4	35,2	13,9	32,4
It is enough for buying food, paying for public utilities and purchasing clothes and footwear	44,4	17,8	0,0	2,2	7,4
Have an opportunity to buy everything I need	5,6	1,5	0,0	0,0	0,7

Table 6. Desirable income per month in health care (by the estimations of the respondents), %

Amount of monthly payment (by health staff estimations) which can motivate to work efficiently, US \$	Head physicians	Physicians	Nurses	Junior nurses	Total
90–140	0,0	0,7	2,7	9,5	4,0
160–200	5,6	1,5	20,9	35,0	18,9
220–290	0,0	6,7	23,1	25,5	18,2
310–390	16,7	11,9	21,4	13,9	16,3
410–490	11,1	17,0	18,7	4,4	13,8
510–1000	66,6	62,2	13,2	11,7	28,8

One of the most significant facts also revealed by the survey is health workers' unawareness of the remuneration principles. Of the respondents, only 34.1% clearly understand the principles of awarding bonuses while 65.9% of them stay unaware (figure 5).

Figure 5. Respondents' awareness of the remuneration principles in health care, %



The majority of those surveyed (almost 90%) does not consider the correlation between salaries in the health care sector and other branches of industry as fair (figure 6). Moreover, 57.5% of the respondents state that salary differentials in the health care sector are unfair too (figure 7). Together with poor moral and financial job satisfaction these factors alienate health workers from the health care sector. According to the survey results, of the respondents, 39% are ready to get out of medicine in case of discharge. Besides, 11.2% of the surveyed state that they have a strong desire to leave Ukraine. So, only 69% of health workers would stay in medicine if they decided to leave the service. Among them 32% prefer to work in public while 29% in private hospitals.

Figure 6. Fairness of the correlation between salaries in the health care sector and other branches of industry (by the estimations of the respondents), %

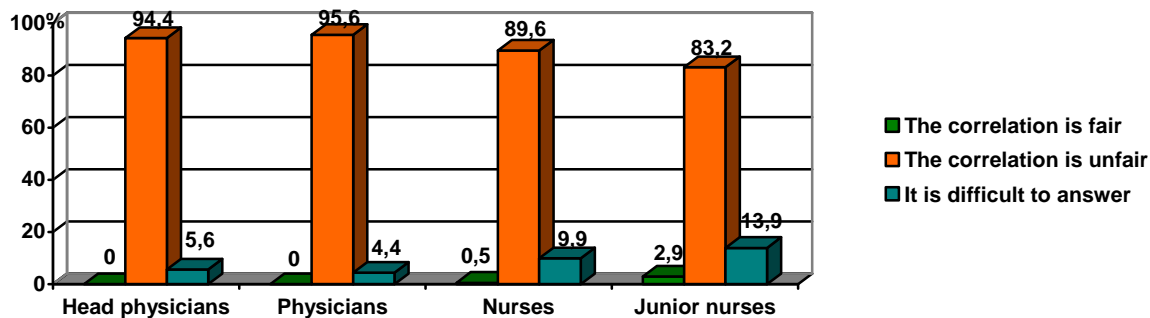
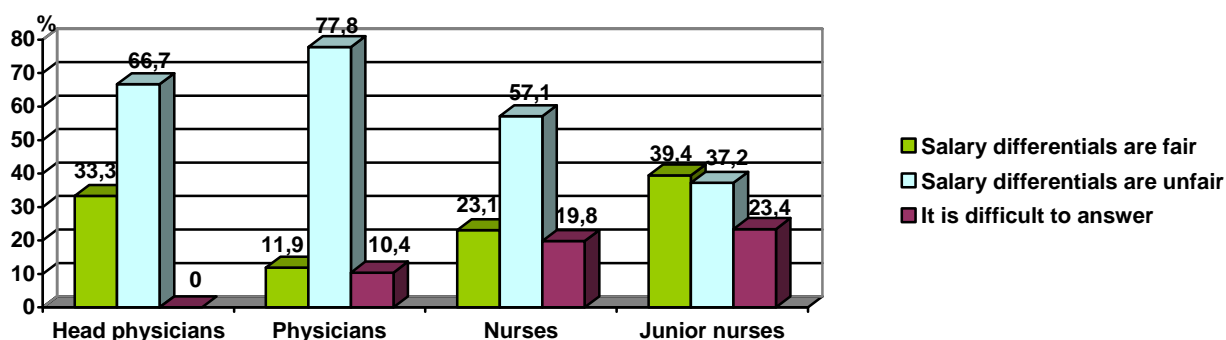
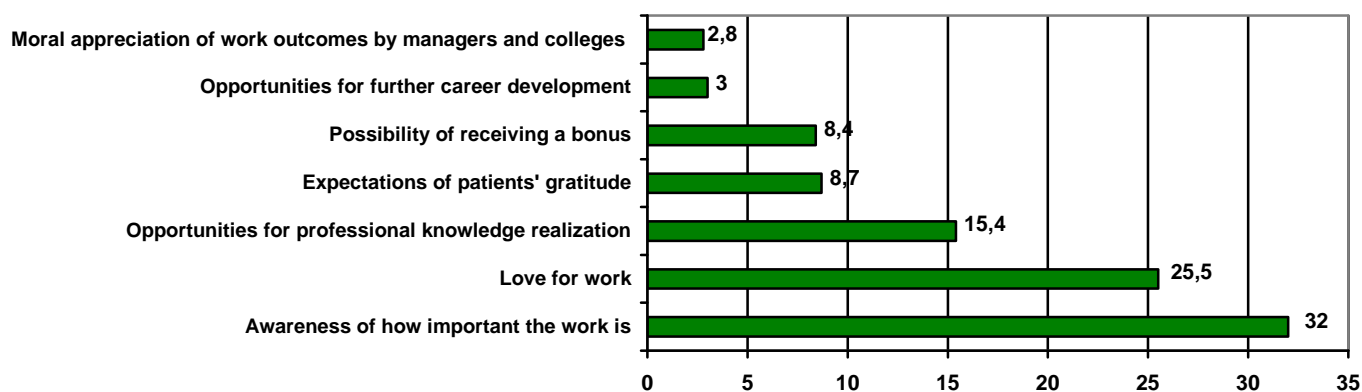


Figure 7. Fairness of salary differentials in health care (by the estimations of the respondents), %



The survey results show (figure 8) that nowadays the most crucial factors which make health staff in Ukraine work efficiently are following: awareness of how important their work is (32%), love for work (25.5%), opportunities for professional knowledge and skills realization (15.4%), expectation of patients' gratitude (8.7%) and possibility of receiving a bonus (8.4%). At the same time, respondents do not care if their work outcomes will be appreciated by the managers in a proper way and are indifferent towards opportunities for further career development.

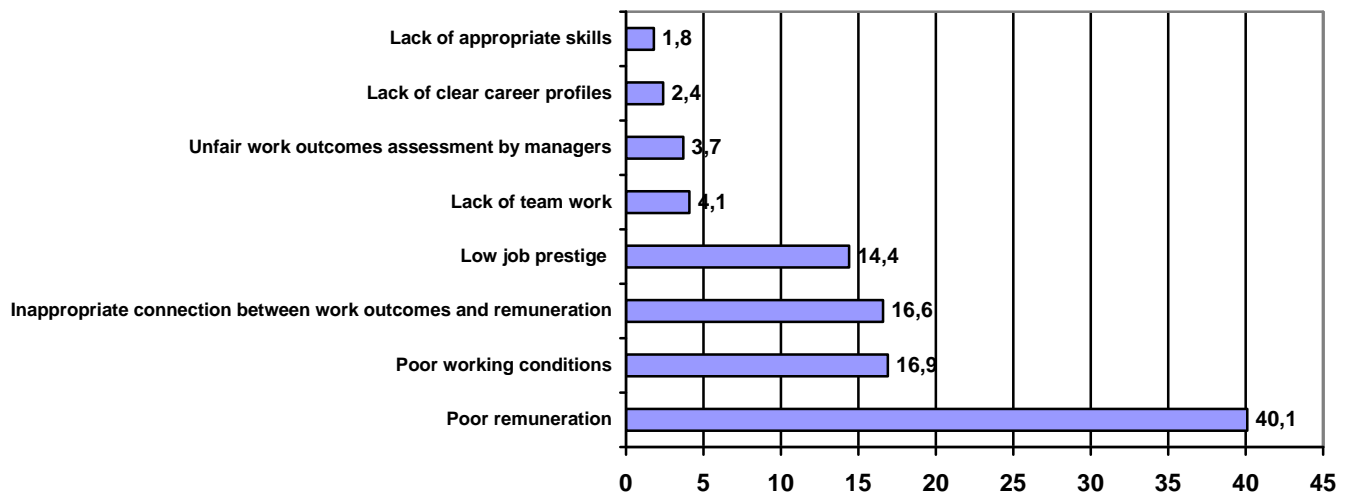
Figure 8. Incentives to work efficiently in health care (by the estimations of the respondents), %



According to the survey (figure 9), the main factor caused low labor efficiency in the health care sector is poor remuneration (40.1%). Such factors as poor working conditions and inappropriate connection between

work outcomes and remuneration also prevent positive changes in the quality of health services. Moreover, it is very important for health workers to have a prestigious job because if it is of no prestige their motivation towards work comes down.

Figure 9. Anti-incentives to work efficiently in health care (by the estimations of the respondents), %



V. Estimation Strategy.

In order to get objective information concerning health staff motivation towards work in Ukraine it is worth building the portrait of a typical Ukrainian health worker on the basis of the survey data. For this purpose the latter will be presented in the following way:

- “informational shear” – an aspect of the monitoring: age, sex, category of health staff, qualification, period of service etc.;
- “sorted group” – identifiable gradation of an aspect: for the aspect “sex” – male or female; for the aspect “category of health staff” – junior nurses, nurses, doctors, head physician etc.;
- “age group” – one of the age groups of health staff: up to 25 years, from 25 to 35 years, from 36 to 45 years etc.;
- $z = 1, 2, \dots, 21$ – an identifier of an “informational shear” (its number according to the questionnaire);
- $q = 1, 2, \dots$ – an identifier of a “sorted group” (its number according to the questionnaire);
- $v = 1, 2, \dots, 5$ – an identifier of an “age group” (its number according to the questionnaire);
- s, r – indexes which show what group of information (statistical or calculated (information received by modeling)) the data belong to;
- $p_s(z, q, v), P_s(z, p)$ – probabilities (determined by the statistical data) of health workers’ belonging to the groups identified by the features (z, q, v) ;
- $n_s(z, q, v), N_s(z, p)$ – quantities of health workers (determined by the statistical data) who belong to the groups identified by the features (z, q, v) ;
- $n_m(z, q, v), N$ – quantities of health workers (determined by the modeling results) who belong to the groups identified by the features (z, q, v) ;
- N – total quantity of health workers used for modeling.

Taking into account the formalization system which has been described above, the mathematical model for building the portrait of a typical Ukrainian health worker can be presented in such a way:

$$p_s(z, q, v) = \frac{n_s(z, q, v)}{\sum_v n_s(z, q, v)} \quad (1)$$

$$P_s(z, q) = \frac{N_s(z, q)}{\sum_q N_s(z, q)} = \frac{N_s(z, q)}{\sum_q \sum_v n_s(z, q, v)} \quad (2)$$

$$n_m(z, q, v) = P_s(z, q) \cdot p_s(z, q, v) \cdot N \quad (3)$$

The results received by the estimation are described below.

VI. Estimation Results.

On the basis of the estimation strategy stated above the portrait of a typical Ukrainian health worker was worked out (see appendix). According to it, a typical Ukrainian health worker can be described as a woman at the age of 25–45 years who has been working in the health care sector for 11–15 years, receives moral and does not receive financial job satisfaction. Such a person does not have any category of proficiency and is ready to look for a new position in another public hospital in case of discharge. Among the most crucial factors that make her work efficiently are awareness of how important her work is, love for work and opportunities for professional knowledge and skills realization. At the same time, she is unmotivated by poor remuneration, weak connection between work outcomes and a salary, poor working conditions. Such a health worker marks that managers do not support her professional development in a proper way. As a result, last year she did not have any opportunities for enriching the knowledge. Besides, a typical Ukrainian health worker reports that the main obstacle in her professional development is the fact that changes in knowledge and skills are not accompanied by changes in remuneration. Moreover, she finds the attestation system in the health care sector completely unfair and is not interested in continuous education and innovations at all.

Such a person is convinced that the correlation between remuneration in health care and other branches of industry is inappropriate. According to her words, salary differentials in the health care sector are unfair too as they do not take into account duties complexity, level of responsibility and work outcomes. Moreover, the salary is so low that it is enough only for purchasing food. In order to make both ends meet it must be equal to 500–1000 \$. A typical Ukrainian health worker also does not know what she can be given a bonus or awarded a prize for and thinks that the right to estimate her work outcomes must be put on her direct manager.

VII. Conclusions and Policy Implications.

This paper aimed to identify trends in health staff motivation in Ukraine. The analysis was based on studies and data published in Ukraine and worldwide. Besides, health workers survey was conducted in Ukrainian public hospitals in order to determine the peculiarities of health staff motivation towards work. According to the received results the portrait of a typical Ukrainian health worker was built.

The research results showed that the period of transition in Ukraine is accompanied by a great number of changes in the health care sector. As a rule, these changes make more harm than good to the quality of health services and lead to poor health of the population. One of the main reasons of such situation is the fact that orientations of health care policy do not agree with health workers' interests and expectations. Consequently, they have low motivation towards work and provide health services of poor quality.

It has been proved that the key role in health staff motivation towards work in Ukraine (so as in other Eastern European countries) is played by the remuneration system. Unfortunately, nowadays it has a large number of imperfections which make health workers indifferent to continuous education and efficient work. Firstly, it provides low salaries which do not correspond with the cost of living. As a result, more than 57% of health staff were behind the poverty line in 2005. Secondly, salary differentials are unfair (a salary of a surgeon is higher than a salary of a nurse only by 36–68\$). Besides, an average salary in the health care sector is lower than in other branches of industry by 35%). Thirdly, there is no direct connection between work outcomes and a salary.

It was found out that, in addition to imperfect remuneration system, health workers' behavior is also negatively influenced by non-financial factors such as poor working conditions, low job prestige and insufficient support of their professional development by managers.

In order to raise health staff motivation towards work and improve in such a way the quality of health services a new motivation mechanism must be processed and implemented in Ukraine. Such mechanism is seen as the complex of political, financial, socio-economic, organizational, moral and psychological levers at the national, regional, organizational and individual levels which are supposed to make health workers work efficiently by coordinating their interests with the interests of the employers and consumers of health services (figure 10).

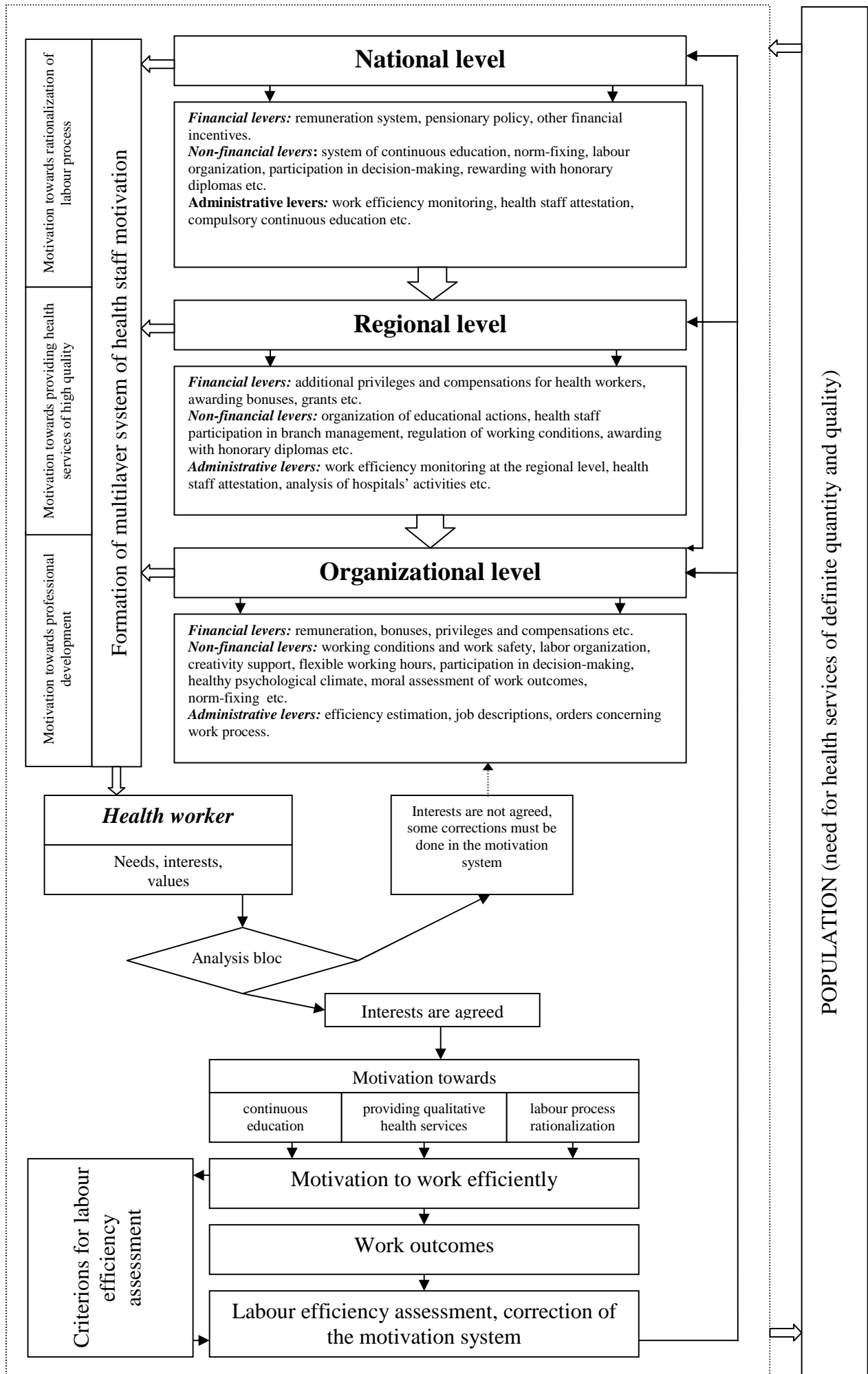
At the national level the place of health care among other branches of industry and main health policy issues must be determined, basic principles of health staff remuneration and pensions' provision have to be worked out, systems of continuous education and attestation are to be developed and total expenditure on health is to be fixed.

At the regional level local authorities have to clarify health policy issues according to the needs of the region and its socio-economic development. At this level some corrections concerning health staff remuneration must be made and additional financial, non-financial and administrative levers must be activated in order to influence health workers' behavior.

At the organizational level approaches to health staff motivation proposed by the state and regional authorities are to be completed in accordance with the organization's peculiarities. At this level official salaries and other additional payment are set, principles and criterions of awarding bonuses are worked out, working conditions are determined. Besides, hospital managers must activate a number of non-financial incentives towards efficient work and continuous education.

Health staff motivation at the individual level must be organized in such a way so as to take into account individual characteristics of the worker (his / her needs, interests, values).

Figure 10. Mechanism of health staff motivation towards work



It is worth noting that the complex of incentives activated in the health care sector must motivate health staff not only to provide health services of high quality, but also to rationalize labour process and enrich professional knowledge (see figure 10).

Undoubtedly, the central place in the mechanism of health staff motivation towards work during the period of transition is occupied by the remuneration system. The latter must be based on the scientifically approved principles and provide competitive salaries, fair salary differentials and direct connection between work outcomes and remuneration. Inasmuch as Ukrainian health care is tax-based and voluntary medical insurance is not highly developed, we are convinced that in order to change the situation with the imperfection of health staff remuneration the following flexible tariff scale must be implemented in public hospitals (table 7).

Table 7. Flexible tariff scale for implementation in the health care sector

Basic tariffs	Adjustment coefficients	Official salaries, \$	Coefficients growth	
			Comparative	Absolute
1	1,00	$x - 1.15x$	–	–
2	1,15	$1.15x - 1.32x$	1,15	0,15
3	1,32	$1.32x - 1.50x$	1,15	0,17
4	1,50	$1.50x - 1.71x$	1,14	0,18
5	1,71	$1.71x - 1.93x$	1,14	0,21
6	1,93	$1.93x - 2.18x$	1,13	0,22
7	2,18	$2.18x - 2.44x$	1,13	0,25
8	2,44	$2.44x - 2.73x$	1,12	0,26
9	2,73	$2.73x - 3.03x$	1,12	0,29
10	3,03	$3.03x - 3.36x$	1,11	0,30
11	3,36	$3.36x - 3.70x$	1,11	0,33
12	3,70	$3.70x - 4.07x$	1,10	0,34
13	4,07	$4.07x - 4.48x$	1,10	0,37
14	4,48	$4.48x - 4.93x$	1,10	0,41
15	4,93	$4.93x - 5.42x$	1,10	0,45
16	5,42	$5.42x - 5.96x$	1,10	0,49
17	5,96	$5.96x - 6.56x$	1,10	0,54
18	6,56	$6.56x - \dots$	1,10	0,60

* x is equal to the living wage

This flexible tariff scale is worked according to the following principles:

- basic tariffs are determined on the basis of duties complexity, worker's qualification and the level of his / her responsibility;
- within every basic tariff a range of official salaries is formed. An official salary of a worker is fixed taking into account his /her labor efficiency;
- a range of official salaries within every basic tariff is worked out by the principle of successive growth (the highest salary within one basic tariff is the lowest within the following);
- the correlation between extreme basic tariffs (the 1st and the 18th) is equal to 1:6.56 (it is the most efficient correlation according to the scientists);
- adjustment coefficients grow by the regressive method. So, the susceptibility threshold in 10% is kept;
- the lowest official salary respective to the 1st basic tariff must not be lower than the living wage.

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Appendix

Elements of formalization for building the portrait of an average statistical health worker

Informational shear			Sorted group		
№	Designation	Name	№	Designation	Name
1	z ₁	Age		v ₁	Up to 25 years
				v ₂	From 26 to 35 years
				v ₃	From 36 to 45 years
				v ₄	From 46 to 55 years
				v ₅	More than 55 years
2	z ₂	Sex	1	q _{2,1}	Female
			2	q _{2,2}	Male
3	z ₃	Period of service in health care	1	q _{3,1}	Up to 5 years
			2	q _{3,2}	6-10 years
			3	q _{3,3}	11-15 years
			4	q _{3,4}	16-20 years
			5	q _{3,5}	More than 20 years
4	z ₄	Level of qualification	1	q _{4,1}	The highest category of proficiency
			2	q _{4,2}	First category of proficiency
			3	q _{4,3}	Second category of proficiency
			4	q _{4,4}	Do not have any category of proficiency
5	z ₅	Moral satisfaction in work	1	q _{5,1}	Yes
			2	q _{5,2}	Better yes than no
			3	q _{5,3}	Better no than yes
			4	q _{5,4}	No
			5	q _{5,5}	It is difficult to answer
6	z ₆	Financial satisfaction in work	1	q _{6,1}	Yes
			2	q _{6,2}	Better yes than no
			3	q _{6,3}	Better no than yes
			4	q _{6,4}	No
			5	q _{6,5}	It is difficult to answer
7	z ₇	Place of work in case of discharge	1	q _{7,1}	Public hospital
			2	q _{7,2}	Private hospital
			3	q _{7,3}	Another branch of industry
			4	q _{7,4}	Emigration
8	z ₈	Incentives to work efficiently	1	q _{8,1}	Awareness of how important the work is
			2	q _{8,2}	Love for work
			3	q _{8,3}	Opportunities for professional knowledge and skills realization
			4	q _{8,4}	Work outcomes appreciation by managers and colleagues
			5	q _{8,5}	Expectations of patients' gratitude
			6	q _{8,6}	Opportunities for further career development
			7	q _{8,7}	Possibility of receiving a bonus
			8	q _{8,8}	Exacting requirements towards work from the managers
9	z ₉	Anti-incentives to work efficiently	1	q _{9,1}	Poor remuneration
			2	q _{9,2}	Inappropriate connection between work outcomes and remuneration
			3	q _{9,3}	Poor working conditions
			4	q _{9,4}	Unfair assessment of work results by managers
			5	q _{9,5}	Lack of appropriate skills
			6	q _{9,6}	Lack of clear career profiles
			7	q _{9,7}	Lack of team-work
			8	q _{9,8}	Low job prestige
10	z ₁₀	Support of professional development by managers	1	q _{10,1}	Yes
			2	q _{10,2}	No
			3	q _{10,3}	It is difficult to answer
11	z ₁₁	Professionalism is improved by	1	q _{11,1}	Attending training courses
			2	q _{11,2}	Participating in scientific conferences
			3	q _{11,3}	Being on probation in Ukraine
			4	q _{11,4}	Taking part in the Internet-based learning programs
			5	q _{11,5}	Being on probation abroad
			6	q _{11,6}	Have no opportunities to enrich professional knowledge

12	z ₁₂	Barriers in professional education	1	q _{12,1}	Lack of financial resources
			2	q _{12,2}	Place of study is remote from the place of work
			3	q _{12,3}	Professional development is not accompanied by wage-push
			4	q _{12,4}	There is no clear necessity of professional education
13	z ₁₃	Opportunities for innovations	1	q _{13,1}	Have an opportunity to realize all my ideas
			2	q _{13,2}	Have an opportunity to realize only some of my ideas
			3	q _{13,3}	Have no opportunity to realize my ideas
			4	q _{13,4}	Have no interest in innovations
14	z ₁₄	Equity of the attestation system	1	q _{14,1}	Equitable
			2	q _{14,2}	Better equitable than inequitable
			3	q _{14,3}	Better inequitable than equitable
			4	q _{14,4}	Inequitable
			5	q _{14,5}	It is difficult to answer
15	z ₁₅	Correlation between salaries in health care and other branches is	1	q _{15,1}	Fair
			2	q _{15,2}	Unfair
			3	q _{15,3}	It is difficult to answer
16	z ₁₆	Salary differentials in the health care sector are	1	q _{16,1}	Fair
			2	q _{16,2}	Unfair
			3	q _{16,3}	It is difficult to answer
17	z ₁₇	Purchasing power of an average salary in the health care sector	1	q _{17,1}	It is enough for buying food
			2	q _{17,2}	It is enough for buying food and paying for public utilities
			3	q _{17,3}	It is enough for buying food, paying for public utilities and purchasing clothes and footwear
			4	q _{17,4}	It is enough for buying everything needed
18	z ₁₈	Amount of monthly payment (by health staff estimations) which can motivate to work efficiently	1	q _{18,1}	90–140 \$
			2	q _{18,2}	160–200 \$
			3	q _{18,3}	220–290 \$
			4	q _{18,4}	310–390 \$
			5	q _{18,5}	410–490 \$
			6	q _{18,6}	510–1000 \$
19	z ₁₉	Awareness of the principles of awarding bonuses	1	q _{19,1}	Yes
			2	q _{19,2}	No
20	z ₂₀	Who must appreciate work results at hospitals	1	q _{20,1}	Supervisors
			2	q _{20,2}	Head physicians
			3	q _{20,3}	Commissions of experts

The portrait of an average statistical health worker built by the modeling results

z	q	p _s	n _m	v				
				v ₁	v ₂	v ₃	v ₄	v ₅
z ₂	q _{2,1}	0,871	912	93	266	261	165	127
	q _{2,2}	0,129	135	5	15	35	47	33
z ₃	q _{2,1}	0,166	174	84	49	25	11	5
	q _{3,2}	0,180	189	12	63	70	32	12
	q _{3,3}	0,222	232	0	89	99	22	22
	q _{3,4}	0,140	147	0	0	76	42	29
	q _{3,5}	0,291	305	0	0	2	164	139
z ₄	q _{4,1}	0,276	127	1	12	33	40	41
	q _{4,2}	0,220	105	1	33	43	16	12
	q _{4,3}	0,119	52	7	20	14	6	5
	q _{4,4}	0,384	180	39	32	43	47	19
z ₅	q _{5,1}	0,335	156	11	35	41	33	36
	q _{5,2}	0,299	141	20	37	41	29	14
	q _{5,3}	0,119	55	5	14	20	13	3
	q _{5,4}	0,089	41	1	15	13	5	7
	q _{5,5}	0,157	73	7	22	21	13	10
z ₆	q _{6,1}	0,017	8	1	1	1	2	3
	q _{6,2}	0,032	14	1	1	3	6	3
	q _{6,3}	0,195	92	10	24	26	19	13
	q _{6,4}	0,681	319	29	87	91	61	51
	q _{6,5}	0,076	34	4	9	10	7	4
z ₇	q _{7,1}	0,320	150	16	30	38	36	30
	q _{7,2}	0,290	137	11	35	41	30	20
	q _{7,3}	0,278	129	11	38	40	24	16
	q _{7,4}	0,112	53	6	21	14	6	6
z ₈	q _{8,1}	0,317	150	6	36	51	34	23
	q _{8,2}	0,253	119	8	27	36	28	20
	q _{8,3}	0,153	72	8	20	21	13	10
	q _{8,4}	0,027	13	1	5	4	2	1
	q _{8,5}	0,086	40	5	10	11	8	6
	q _{8,6}	0,033	15	5	4	3	2	1
	q _{8,7}	0,083	39	6	13	10	6	4
	q _{8,8}	0,048	23	3	11	5	2	2
z ₉	q _{9,1}	0,400	187	19	50	53	37	28
	q _{9,2}	0,166	79	5	21	24	16	13
	q _{9,3}	0,169	79	6	26	22	12	13
	q _{9,4}	0,037	18	2	5	4	3	4
	q _{9,5}	0,019	9	2	1	2	2	2
	q _{9,6}	0,025	12	3	5	1	1	2
	q _{9,7}	0,041	19	2	6	7	3	1
	q _{9,8}	0,143	66	4	19	20	12	11
z ₁₀	q _{10,1}	0,258	119	8	31	35	24	21
	q _{10,2}	0,426	200	9	50	65	43	33
	q _{10,3}	0,316	148	18	42	40	27	21

z ₁₁	q _{11,1}	0,318	148	10	44	44	26	24
	q _{11,2}	0,262	124	8	26	39	32	19
	q _{11,3}	0,023	12	1	5	3	1	2
	q _{11,4}	0,040	19	2	5	6	4	2
	q _{11,5}	0,011	6	1	1	1	1	2
	q _{11,6}	0,347	163	19	43	47	33	21
z ₁₂	q _{12,1}	0,302	141	12	39	43	28	19
	q _{12,2}	0,105	48	4	10	15	13	6
	q _{12,3}	0,344	161	16	52	42	24	27
	q _{12,4}	0,249	116	6	22	35	32	21
z ₁₃	q _{13,1}	0,091	42	4	6	10	12	10
	q _{13,2}	0,258	121	6	23	34	31	27
	q _{13,3}	0,121	57	8	16	20	11	2
	q _{13,4}	0,530	248	26	77	70	42	33
z ₁₄	q _{14,1}	0,235	109	16	39	29	15	10
	q _{14,2}	0,134	62	4	17	15	10	16
	q _{14,3}	0,235	111	10	28	32	23	18
	q _{14,4}	0,277	132	6	26	35	29	34
	q _{14,5}	0,119	55	19	14	11	7	4
z ₁₅	q _{15,1}	0,022	9	1	2	2	2	2
	q _{15,2}	0,751	353	25	94	103	69	62
	q _{15,3}	0,227	106	13	27	31	23	12
z ₁₆	q _{16,1}	0,245	115	14	31	32	23	15
	q _{16,2}	0,585	274	19	73	80	54	48
	q _{16,3}	0,170	79	10	20	23	17	9
z ₁₇	q _{17,1}	0,592	279	32	82	84	52	29
	q _{17,2}	0,322	152	11	38	40	29	33
	q _{17,3}	0,074	34	1	2	7	16	8
	q _{17,4}	0,013	6	1	1	1	1	2
z ₁₈	q _{18,1}	0,040	19	3	4	4	3	5
	q _{18,2}	0,189	87	15	20	24	20	8
	q _{18,3}	0,182	85	11	26	27	15	6
	q _{18,4}	0,163	76	3	22	23	13	15
	q _{18,5}	0,138	64	3	20	19	10	12
	q _{18,6}	0,288	135	10	30	38	31	26
z ₁₉	q _{19,1}	0,341	159	13	46	47	29	24
	q _{19,2}	0,659	309	31	78	87	65	48
z ₂₀	q _{20,1}	0,465	218	28	62	60	40	28
	q _{20,2}	0,272	127	14	38	34	21	20
	q _{20,3}	0,263	123	2	26	44	30	23