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# THE WHO HEALTHCARE STANDARDS IN THE CONTEXT OF DEMOGRAPHIC PROCESSES

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## ABSTRACT.

**Background and Objective.** The aim of the study was to analyze demographic changes in such a way as to provide data that might be useful for shaping the healthcare system in accordance with the WHO standards. The analysis was based on the example of the population over the age of 65.

**Research Design and Methods.** Focusing on the population over 65, we analysed statistics and demographic data using descriptive statistics methods. In addition, we referred to the demographic forecasts concerning the world population for 2020–2050.

Results and Conclusions. We juxtaposed the WHO standards with the size of the target group and the data which takes into account the difference in the age structure of the population in different regions of the world. Our conclusions cast doubt on the legitimacy of setting standards for the total population, both in terms of the current health care and future planning.

**Discussion and Implications.** Changes in the general population, and for example in the population over 65 are actually not proportional. Therefore, it seems more logical and reasonable to analyze data about geriatrics by examining the population over 65 only. The geriatric care base should be created using only and exclusively the data which concerns the group of patients to whom it is directed, namely elderly people.

### Introduction

Adjusting the healthcare system to social demand is problematic not only because changes in the size and structure of the population are so significant, but also because the direction of these changes lacks stability. Demographic changes of a fluctuating nature require flexible functioning of health care, rather than major reorganizations each time, simply because such changes are very expensive to reverse. In theory, the WHO quantitative healthcare standards, combined with demographic changes and forecasts should help. However, the question arises whether the WHO healthcare standards can and should provide guidelines? To answer this question, we briefly present the WHO standards, along with their specificity, and next analyse their usefulness in comparison with demographic data and forecasts, taking the example of the elderly population.

Although the aging of the population is a global trend, the global average does not reflect the situation in particular regions of the world (and it is precisely this data that is needed when planning health care). The WHO recommendations concerning the geriatric standards of medical services for the elderly, are very general – without any detailed propositions and designed for the total population. It is worth noting, however, that the number of elderly people, for example in Africa (https://unstats.un.org/unsd/demographic/produc ts/dyb/dyb2.htm 2017, https://www.populationpyramid.net/world/2015/ 2017), is several times lower than in Western countries. Thus, the data which does not take into account these differences, understate the demand for geriatric care for example in European countries, and overstate it in Africa.

Three continents were selected for analysis – Europe, Africa and Latin America – on account of significant differences in the population over 65 (Europe and Africa), and at the same time similarities in the population size of 65+ (Africa and Latin America). We use these examples to question the legitimacy of establishing uniform standards for the whole population, instead of referring to a target group – in this case – the elderly.

### Results and Conclusions

Standards of health care for the elderly – WHO recommendations

According to the recommendations made by the World Health Organization, for each 100,000 – 120,000 total population, there should be 20–25 geriatric beds in hospital wards, 15–20 geriatric beds in day wards, one geriatric clinic and two geriatricians. Inpatient wards should be separate organizational units. They should meet required standards with regard to rooms, equipment, the number of staff and the number of residents living in a given area (within a radius of around 30 km). It is necessary to have properly trained staff, experienced in caring for elderly people. There is also a need to contract a minimum of 400 – 500 outpatient medical consultations a month (4,800 – 6,000 per year) and about 200 medical home visits per month (2,400 per year) for every 100,000 people. The estimated number of nursing home visits amounts to around 500 – 600 a month (6,000 – 7,200 per year) for every 100,000 people. Outpatient care is provided not only for local patients but also for those living in a given district, poviat ( county) or municipality, while home care is reserved for the residents of the city in which a specific medical center operates and the surrounding area within a radius of 30 kilometers (Derejczyk et al. 2005). These standards do not include qualitative data. They do not focus on human resources (i.e. who should be a member of a geriatric care team) and material resources (equipment, apparatus, facilities necessary for providing geriatric services), but only on the quantitative aspect of this care.

Health care standards – WHO recommendations and their conversion to the population over 65 years of age In its guidelines the World Health Organization defines the standards of geriatric care per 100,000 – 120,000 total population. However, the population under the age of 65 do not need contact with the geriatric doctor. Since demographic changes affecting the total population and the elderly population over 65 are not proportional, it seems more logical and legitimate to analyze geriatric data by focusing only on the population over the age of 65. The geriatric care base should be created from the data concerning only the

group of patients for whom these services are provided – in this case the elderly.

How is this situation related to geriatric care standards? Assuming that in 2015 the world population over 65 years was 8.3%, the WHO standards say that for every 8,300 elderly people there should be 20 hospital beds. So proportionally for every 10,000 people over 65 in the world there should be 24.10 geriatric hospital beds, 18.07 geriatric beds in day wards, 1.20 outpatient clinics, 2.41 geriatricians, 7,230 outpatient consultations 2,892 medical and 8,675 nursing home visits per year. This conversion factor would not have to be updated along with demographic processes, but it would probably "painfully" reveal the gap between the standards and the needs and logic of keeping a sense of proportion. We will demonstrate what these numbers mean in practice using the following example: within one year, only less than 29% of senior citizens can receive – once a year – medical consultation, which can last up to 30 minutes (assuming that the doctor works six hours a day, five days a week, and there are 250 working days in the year). Is it not too optimistic to assume that more than 70% of senior citizens do not need any medical consultation per year, and that the remaining 30% need just one or two appointments, lasting 30 minutes in total? And this example does not include certain demographic data.

Later in the study, we analyze further demographic data and convert them into the WHO standards. We examine the data for selected continents (for the sake of clarity). However, an analogous profile can be developed for individual countries. The conclusions would be similar. And so Table 1 presents summary figures defining the need for a geriatric base: recommended by the WHO for each 100,000 total population and converted into the population of 65+, estimated by the WHO (i.e. 8.3%) for each continent, and next the real population over 65 for a given continent. For example, we will present the way how to assess the demand for geriatric hospital beds in Africa, Europe and Latin America according to the WHO standards. The standard defines this demand at the level of 20 beds for each 100,000 total population. Assuming that the population of people over 65 amounts to 8.3% of the total population, there should be 238,800 geriatric hospital beds in Africa, 148,200 in Europe, and 126,400 in Latin America. The population of 65+ in Africa is 41 million, 130 million in Europe, and 48 million in Latin America. Considering real data, there should be (by WHO standards) 98,810 hospital beds in Africa, 313,300 in Europe, and 115,680 in Latin America. Below, we present the method of calculation based on the number of beds for the population of 65+ in Africa.

The WHO standard = 20 beds for 8,300 people over 65 years plus 4.10 beds for 1,700 people over 65 (the number of people which is lacking for attaining the number of 10,000 people over 65)
which makes
24.10 beds for every 10,000 people aged 65+ in the world

Africa 41,000,000 population 65+ (as of 2015) divided by 10,000 and multiplied by 24.10 beds (WHO standard) = 98,810 geriatric hospital beds for 41,000,000 people over 65 years of age

TABLE 1
Applying the WHO standards, established for the entire population, would actually lead to a kind of absurdity. For example, the population of senior citizens in Africa, which is three times lower than in Europe, should be provided with 1.6 times more hospital beds whereas in Latin America, where the number of elderly people is not much higher than in Africa, by the WHO standards, the number of geriatric hospital beds should be almost 1.9 times higher. In their current formula, the World Health Organization recommendations are confusing both in relation to the present and to the future. As for the present, the standards defined for the general population are misleading because they assume an average stable percentage of the elderly population on all continents. The WHO standards are formulated as if the demographic structure of societies was fairly constant and uniform for all continents. However, for example Africa understates the percentage share of the population over 65 in the total population of the world. In some African countries, it makes no sense to relate the standards of geriatric care to the needs of this group, because the latter almost does not exist. In Africa, in ten out of 47 countries, the population have exceeded 65 years (e.g. in Sierra Leone, people live 46 years and in another part of Africa almost 75 years). Planning for the future based on these standards is also erroneous due to the disproportionate increase in the size of this group in relation to the entire population.

The WHO guidelines for healthcare standards do not take into account the specific situations of individual regions, such as access to clean water and food, hygiene and sanitary conditions, health care centers, and so on. There are regions where there is a shortage of basic necessities. This leads to a higher incidence of diseases, as well as mortality of adults and children. One could say that there is a need for adequate standards of care for newborns, children and adults in these regions. However, the thing is that standards which drastically deviate from reality cease to fulfill their function. So, what purpose and whom are such standards be serving?

The World Health Organization is an organization which deals with health protection. Actions are taken to provide medical care for the world's population http://www.who.int/en/ 2017). The standards of medical care provided for the elderly should be a model of how to handle the patient. Standards are created in order to facilitate and standardize the work with the patient in terms of facilities, equipment, staff number, and also a code of conduct and treatment methods (Derejczyk et al. 2005). Care standards are "conduct guides". Therefore, making them uniform should bring about an increase in the quality of patient care. The elderly population, living in different corners of the world and in different realities, also differ in the incidence of diseases, depending on their living conditions. Due to such different realities in highly developed, developing and third world countries, formulating general standards, identical for all continents/ countries, seems to be pointless. If the process of formulating standards took account of demographic data and forecasts, which are easily accessible, such standards would have to be completely different.

Demographic changes of the population over 65 years of age against a background of the entire population Changes in the total population and the population over 65 in the world in 2011–2015 show an upward trend. During these five years of observation, the growth rate of the total population and the population over 65 years the world has risen, but it should be emphasized again that the average growth rate of the population over 65 is considerably lower in Africa and Latin America than in Western countries. In comparison – in 2015 the percentage of people over 65 was 8.3% in the world and respectively: in Europe – 17.6%, in Latin America – 7.6%, and in Africa – 3,4% (, https://esa.un.org/unpd/wpp/Download/Standard/Population/ 2017). In the analyzed period of five years, there was a 5.38% increase in the total population of the world. A similar trend was observed in the population over 65, which increased by 13.97% over this time span. The percentage of elderly people in relation to the total population was 7.7% in 2011, and 8.3% in 2015. A similar situation was noticed on each continent. For example, the growth of the total population at a similar level was observed in Latin America (5.86%), the highest increase in population was recorded in Africa (14.5%), and the lowest in Europe (0.27%). A similar trend was observed in the population over 65. During the period of these five years there was a growth in the population over 65 at a similar level – in Latin America (14.28%), followed by Africa (10.81%) and Europe (7.44%)(https://esa.un.org/unpd/wpp/Download/Standard/Population/ 2017).

The above analysis indicates that the current population status or generalized dynamics of change cannot be the point of reference

for creating care standards or a geriatric base, but also for issues relating to any other age group. And if this is the case, then it is worthwhile to look at and analyze the demographic forecasts to get the full picture.

### Demographic changes forecasted until 2050

In comparison to 2015, the forecasts regarding the total population of the world assume its constant increase. In 2030 this number will increase by 15.72%, in 2040 by 24.75%, and in 2050 by 32.35%. With total population growth, long-term forecasts assume an increase in the population over 65. In comparison to 2015, this population group will increase by 62.93% in 2030, in the next ten years by 111.65%, and in 2050 by 152.67%. A similar trend will continue on each continent (in relation to 2015) in long–term forecasts. We will observe a steady increase in the size of the total population with the exception of Europe. Analyzing the dynamics of changes affecting the total population, the largest percentage of population growth in 2050 will be recorded in Africa (by 111.62%). As for the other continents, it is estimated that Latin America will have a smaller population increase (by 23.32%). By contrast, Europe will see a decrease (by 3.39%) in the total population size (http://www.who.int/en/ 2017).

Long–term forecasts assume a steady increase in the population over 65 years on all continents. The largest increase in this population group in 2030 will be observed in Latin America (by 77,67%) and Africa (by 69.49%), and the smallest in Europe (by 30,91%). However, 20 years later (in 2050) the order of the growth in the population over 65 is estimated as follows – the highest percentage of growth will be in Africa (by 264.99%), Latin America (by 214.37%) and the smallest in Europe (by 52, 86%). On the other hand, the highest percentage of people over 65 in comparison with the entire population both in 2020 and in 2050 will be observed in Europe (19.25% and 27.84% respectively), in Latin America (8.83% and 19.40%) and in the world (8.29% and 15.82%). The lowest percentage of older people is estimated in Africa (3.61% and 5.96%) (https://esa.un.org/unpd/wpp/Download/Standard/Population/ 2017).

WHO health care standards for the elderly population in the context of projected changes If we include the above data in the forecasts about the demand for geriatric care, by 2050 the geriatric base (number of beds, doctors, etc.) should increase accordingly.

Table 2 contains the data from the selected continents and the comparison of the demand for the geriatric base (the current state, WHO standards for the current population figures, projections in its current state, and standards for the projected population figures), calculated according to the WHO standards for each 100,000 total population. It also shows what it would really mean and what it would mean when converted into the population over 65. We will illustrate the point with an example concerning three continents – Africa, Europe and Latin America. We have selected these continents on account of significant differences in the size of the elderly population in Africa and Europe, and at the same time similarities in the size of the elderly population in Latin Americas and Africa, with the percentage of the population 65+ being almost four times greater in Latin America. The compilation of demographic data and forecasts for the selected continents in relation to the WHO standards is reflected in the geriatric base, which is significantly different.

TABLE 2

The demand for a geriatric base in Europe in 2050 will amount to 480,301 beds, 23,915 outpatient clinics and 48,030 doctors, with an increase in the elderly population by 52.86%; in Latin America: 364,645 beds, 18,157 outpatient clinics and 36,465 doctors, with an increase in the elderly population by 214.37%, and in Africa with an increase in the population 65+ by 265% (363,059 beds, 18,078 outpatient clinics and 36,306 doctors) (http://www.who.int/en/ 2017). It should be noted that Europe has the highest percentage of elderly people in comparison to the total population in the analyzed (2011–2015) and forecasted years (2020–2050).

Another thing worthy of mention is the prospects of changes in the size of a particular generation from birth to the age of 65 on each continent (TABLE 3). How many newborn children reach the age of 65? How long do people live after attaining 65? In Africa, the population getting to the age of 65 is smaller than at the moment of birth by 56.34%, in Latin America by 37.15%, in Europe by 35.74%.

TABLE 3

Forecasts which are detached from reality provide questionable data for planning anything. Planning a geriatric base should take into account local needs and realities of life (level of stability of living conditions, life expectancy in the disease, availability of medical care, water and food, sanitary conditions). Also, the population – or, more precisely, specific generations – should be observed with reference to demography, health, level of mortality and morbidity for this population in a given region. Within a ten – year perspective, on the basis of this information, rather than global data, we could assess the "condition" of the population 50+ more realistically and identify the most probable needs for future geriatric care.

### Summary

Defining standards for a specific target group would make it possible to avoid difficulties related to different age structure of the population in different regions of the world and to the specificity of the situation and living conditions prevailing there. The same pertains to designing changes in health care on the basis of the data obtained from observing specific generational groups. It is worth noting that sustaining WHO standards – which are dubious anyway – (2.41 geriatricians, 24.10 geriatric beds, 7,230 outpatient consultations, etc.) will be very difficult in Western countries, because the growing number of elderly people will need more consultations, more geriatric doctors, more geriatric beds; because when the WHO created their standards, they did not take into account that we will live longer with an illness. On the other hand, the same standards are difficult to achieve in developing countries. The question: What is the purpose of standards formulated in this manner? remains unanswered.

### Captions for Tables

Table 1. Comparison of the demand for a geriatric base for selected continents with reference to the WHO standards in 2015.

Table 2. Projected geriatric base until 2050, calculated according to the WHO standards for the total population and a proposed method of calculation for the population 65+.

Table 3. Changes in the size of the population living to the age of 65 from birth to death for the selected continents in 1950–2015 and the forecasted years.

**Table 1. Comparison of the demand for a geriatric base for selected continents with reference to the WHO standards in 2015.**

| Continent | Geriatric base | WHO standard for each 100,000 total population | WHO standard calculated on the assumption that the population of 65+constitutes 8.3%of the total population | Data converted into the actual participation rate of the population 65+ in the total population |
|---|---|---|---|---|
| Africa<br><br>41,000,000 population 65+ (3.4%) | hospital beds | 20 | 238,800 | 98,810 |

| | | | | |
|---|---|---|---|---|
| | beds in daily wards | 15 | 179,100 | 74,087 |
| | geriatric clinics | 1 | 11,940 | 4,920 |
| | geriatricians | 2 | 23.880 | 9,881 |
| | outpatient consultations | 6,000 | 71,640,000 | 29,638,900 |
| | medical home visits | 2,400 | 28,656,000 | 11,857,200 |
| | nursing home visits | 7,200 | 85,968,000 | 29,520,000 |
| Europe 130,000,000 population 65+ (17.6%) | hospital beds | 20 | 148 200 | 313,300 |
| | beds in daily wards | 15 | 111 150 | 234,910 |
| | geriatric clinics | 1 | 7,410 | 15,600 |
| | geriatricians | 2 | 14,820 | 31,330 |
| | outpatient consultations | 6,000 | 44,460,000 | 93,977,000 |
| | medical home consultations | 2,400 | 17,784,000 | 37,596,000 |
| | nursing home visits | 7,200 | 53,352,000 | 112,775,000 |
| Latin America and the Caribbean 48,000,000 population 65+ (7.6%) | hospital beds | 20 | 126,400 | 115,680 |
| | beds in daily wards | 15 | 94,800 | 86,736 |
| | geriatric clinics | 1 | 6,203 | 5,760 |
| | geriatricians | 2 | 12,640 | 11,568 |
| | outpatient consultations | 6,000 | 37,920,000 | 34,699,200 |
| | medical home consultations | 2,400 | 15,168,000 | 13,881,600 |
| | nursing home visits | 7,200 | 45,504,000 | 41,640,000 |

Source: The author`s own study based on (Derejczyk et al. 2005, https://esa.un.org/unpd/wpp/Download/Standard/Population/2017).

**Table 2. Projected geriatric base until 2050, calculated according to the WHO standards for the total population and a proposed method of calculation for the population 65+.**

| Continent | Geriatric base | WHO standard for 100,000 total population | The desired increase by 2050, calculated according to WHO standards (assuming that the population 65+ will be 15.8% of the total population) | Data converted into the actual participation rate of the population 65+ against a background of the total population in 2015 | The desired increase by 2050, calculated for the projected population 65+ from each continent |
|---|---|---|---|---|---|
| Africa 150,647,000 population 65+ (5.96%) | hospital beds | 20 | 505,511.4 | 98,810 | 363,059.27 |
| | beds in daily wards | 15 | 379,133.55 | 74,087 | 272,219.129 |
| | geriatric clinics | 1 | 25,275.57 | 4,920 | 18,077.64 |
| | geriatricians | 2 | 50,551.14 | 9,881 | 36,305.927 |
| | outpatient consultations | 6,000 | 151,653,220 | 29,638,900 | 108,902,716.3 |
| | home medical consultations | 2,400 | 60,661,368 | 11,857,200 | 43,560,634.579 |
| | nursing home visits | 7,200 | 181,984.10 | 29,520,000 | 130,810,753.09 |
| Europe 199,295,000 population 65+ (27.84%) | hospital beds | 20 | 143,144.2 | 313,300 | 480,300.95 |
| | beds in daily wards | 15 | 107,358.15 | 234,910 | 360,126.065 |
| | geriatric clinics | 1 | 7,157.21 | 15,600 | 23,915.4 |
| | geriatricians | 2 | 14,314.42 | 31,330 | 48,030.095 |
| | outpatient consultations | 6,000 | 42,943,260 | 93,977,000 | 144,070,355.5 |

| | | | | | |
|---|---|---|---|---|---|
| | home medical consultations | 2,400 | 17,177,304 | 37,596,000 | 57,627,544.315 |
| | nursing home visits | 7,200 | 51,531,912 | 112,775,000 | 172,882,433.65 |
| Latin America and the Caribbean 151,305, 000 population 65+ (19.40 %) | hospital beds | 20 | 155,968.2 | 115,680 | 364,645.05 |
| | beds in daily wards | 15 | 116,976.15 | 86,736 | 273,408.135 |
| | geriatric clinics | 1 | 7,798.41 | 5,760 | 18,156.6 |
| | geriatricians | 2 | 15,596.82 | 11,568 | 36,464.505 |
| | outpatient consultations | 6,000 | 46,790,460 | 34,699,200 | 109,378,384.5 |
| | home medical consultations | 2,400 | 18,716,184 | 13,881 600 | 43,750,899.885 |
| | nursing home visits | 7,200 | 56,148,552 | 41,640,000 | 131,252,584.35 |

**Source: The author`s own study based on (Derejczyk et al. 2005, https://esa.un.org/unpd/wpp/Download/Standard/Population/ 2017).**

**Table 3. Changes in the size of the population living to the age of 65 from birth to death for the selected continents in 1950–2015 and the forecasted years.**

| Continent (number in thousands) | Year | Age | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 5 | 30 | 50 | 65 | 70 | 80 | 90 | 100 |
| Africa | 1950 | 8,825 | | | | | | | | |
| | 1955 | | 7,410 | | | | | | | |
| | 1980 | | | 6,074 | | | | | | |
| | 2000 | | | | 5,071 | | | | | |
| | 2015 | 56. 34% | | | | 3,853 | | | | |
| | 2020 | | | | | | 3,246 | | | |
| | 2030 | | | | | | | 1,671 | | |
| | 2040 | | | | | | | | 347 | |
| | 2050 | | | | | | | | | 39 |
| Europe | Year | Age | | | | | | | | |
| | | 0 | 5 | 30 | 50 | 65 | 70 | 80 | 90 | 100 |
| | 1950 | 13,112 | | | | | | | | |
| | 1955 | | 10,986 | | | | | | | |
| | 1980 | | | 10,452 | | | | | | |
| | 2000 | | | | 9,843 | | | | | |
| | 2015 | 35. 74% | | | | 8,422 | | | | |
| | 2020 | | | | | | 7,747 | | | |
| | 2030 | | | | | | | 5,726 | | |
| | 2040 | | | | | | | | 2,480 | |
| | 2050 | | | | | | | | | 592 |
| Latin America and the Caribbean | Year | Age | | | | | | | | |
| | | 0 | 5 | 30 | 50 | 65 | 70 | 80 | 90 | 100 |
| | 1950 | 6,037 | | | | | | | | |
| | 1955 | | 5,584 | | | | | | | |
| | 1980 | | | 4,973 | | | | | | |
| | 2000 | | | | 4,454 | | | | | |
| | 2015 | 37. 15% | | | | 3,794 | | | | |
| | 2020 | | | | | | 3,444 | | | |
| | 2030 | | | | | | | 2,434 | | |
| | 2040 | | | | | | | | 1,087 | |
| | 2050 | | | | | | | | | 529 |

Source: The author`s own study based on (https://esa.un.org/unpd/wpp/Download/Standard/Population/ 2017).

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