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José Pedro Pereira de Barros Carneiro

Impacto do estado social nos resultados em saúde das populações – uma análise dos dados da OCDE 2015 / Impact of welfare state on population health outcomes – an analysis of OECD 2015 data

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TÍTULO DISSERTAÇÃO/~~MONOGRAFIA~~ (riscar o que não interessa)

Impact of welfare state on population health outcomes – an analysis of OECD 2015 data

ORIENTADOR

Doutor António Luís Trindade Sousa e Lobo Ferreira

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Dedicatória

Para a minha irmã, para a minha mãe e para o meu pai, para a mãe do meu pai e para o pai da minha mãe.

Abstract

Beveridgean and bismarckian health models have been presented as best striking the balance between equity of access, efficiency and cost control. Therefore, it would be interesting to see how these compare in a series of health indicators.

Although some authors have already addressed this issue, this work uses the most recent (and complete) data from the Organisation for Economic Co-operation and Development (OECD) databases made available in the context of the "Health at a Glance 2015 – OECD Indicators" report. The results are then adjusted to the economic capacity of the populations (Gross Domestic Product (GDP) per capita). In addition, this paper attempts to understand whether economic capacity per se is capable of influencing health outcomes, and how the richest and poorest countries compare, within each model.

The results of this study show that the differences found in a simple analysis between health systems are less than ever. Among these, medical productivity and ease of access to health care are favourable to non-Beveridge models. However, it is also in these models that the poorest countries have worse results, so they will be able to more easily amortize the social differences compared to the richest countries in the beveridgean model. Finally, the main determinants of health outcomes are GDP per capita and, consequently, health expenditure per capita, although there seems to be a point (somewhere between the second and third quartiles of GDP per capita) where economic capacity ceases to play such a preponderant role in health outcomes.

Introduction

The universal access to quality health care has been, over the last decades, a key issue within the health policy debate in several countries. Thus, it is becoming increasingly evident the converging towards a system that tries to guarantee this universality.

In fact, except minor adjustments by each country, it is possible nowadays to try to categorize a given health system within four basic models: Bismarck, Beveridge, Private Insurance and *out-of-pocket*. The latter is mostly seen in the poorest countries, like India, Pakistan or Cambodia where, in the absence of a health payment system, there is an almost total dependence on charitable services or, more often, on the exclusive user's payment (out-of-pocket payment) (Lee and Mir 2014).

The Private Insurance has been classically associated, in its pure form, to the United States (US), where historically there is always been a dominance of the private health insurances, except for the social contribution through the Medicare and Medicaid programs, which covered a tiny portion of the population in the earliest stages (Lameire et al. 1999); in 2014, about 66% of the residents in the country were covered by a private voluntary health insurance, while the public programmes encompassed about 36,5% of the US residents – Medicare accounted for 16%, Medicaid for about 19,5% and the military health care insurance was responsible for 4,5% (some residents met criteria for more than one insurance scheme). About 33 million people in the US had no health cover at all, which represents 10,6% of the population. Thereat, the Affordable Care Act program had been enacted in 2010, which aimed to protect the less privileged parcel of the population, and has been accomplishing its goal since its creation, with 2015 projections pointing to a reduction of about 24 million people not covered by health insurance in 2018 (E. Mossialos January 2016), although this will depend on political choices.

The beveridgean model is based on the idea of an universal free access to health care, envisioned several centuries ago, and probably first described, in a more organized way, by John Bellers, still in the eighteenth century (Moore 2008). Just over two centuries later does it lastly takes shape in the United Kingdom (UK), by the Act of 1946 and based on the recommendations of the *Sir* William Beveridge's report (Beveridge 2000). This model resorts on tax collection to support a public scheme that includes health services intended to be universal, being these provided by centrally managed entities; in the Beveridge model there is a pyramidal hierarchical organization, where primary health care stand at the bottom and the highly specialized hospitals at the top; the access to the latter ones is generally dependent on the referral by a general practitioner (GP) (*gatekeeping* system), following a strict geographic subdivision (Bevan et al. 2010; van der Zee and Kroneman 2007).

On the other hand, the bismarckian model was born in Germany in 1883, coined by Otto von Bismarck with its Sickness Insurance Law, which makes this country the first to have a national social health insurance system (Ziller et al. 2015). It differs from the beveridgean model in that it is more pluralist, with multiple insurers, and the providers are private. There is no *gatekeeping* system, allowing direct access to the hospital specialities, being these parallel to the primary health care (there is no pyramidal hierarchy); hence, there are no geographical access restrictions too (Bevan et al. 2010; van der Zee and Kroneman 2007).

Since the implementation of a health model in Germany, many countries have been following the example: France has completed the Western Europe coverage in 1928; in Russia, a National Health Service was created in 1937, fed by general revenues and consequence of the Russian Revolution of 1917; in New Zealand, the health coverage emerged in 1939 and in the Scandinavian countries after the World War II; shortly after that, the beveridgean model appears in the UK. Outside of Europe, Japan adopted health coverage in 1922, with universal extension in 1946; Chile was the first developing country to create a statutory health system, in 1924, only for industrial workers at first, but also covering the more underprivileged population 28 years later, with the creation of *Servicio Nacional de Salud*. The sub-Saharan African countries developed health insurances, albeit with several limitations, in the end of the sixties and seventies. In the end of the 70’s, more than 85 countries had established social security programs that included access to health care – more than a half were developing countries (Roemer 1997).

Despite the initial multiplicity of health schemes, over the years one can see a convergence of the various health policies towards the Bismarck and Beveridge models, which is still taking place. Actually, as the poorest countries’ economies are growing and citizens demand more from their governments, there is a growing interest from the latter in the redesigning of the social security programs, which include health coverage (Kruk 2013). If we take a look at the post-Soviet transition, we realize that the majority of the countries of the Eastern Bloc, including Soviet Union and allied countries from the eastern and central Europe – initially adopting the Soviet-type Semashko health model -, decided to enter a market-oriented economy and to abandon the policlinics model, shifting towards a bismarckian, beveridgean or mixed model (Antoun et al. 2011; Lember 2002). Furthermore, the demographic inversion has forced countries to rethink their health models, not only those like China in which the universality is clearly not granted and urge for a transition to a bismarckian/beveridgean model, but also the countries that have established these models several decades ago (Joel and Dufour-Kippelen 2002; Liu and Sun 2015).

Health reforms in the different countries have tried to find an equilibrium between a triad of factors: equity of access, efficiency and cost control (Or et al. 2010). For this reason we can understand the proliferation of the Bismarck and Beveridge models, precisely because they are the ones that better allow that equilibrium. However, there is no evidence that any of them has completely achieved it to date, because each one has their advantages and disadvantages. The beveridgean model has been recognized for lowering access inequality (because it is a universal model that avoids adverse selection), also permitting a better cost control as it is centrally managed (despite the risk of underfunding); the main disadvantages that have been reported are the lower ability to choose that is offered to users (by the *gatekeeping* process) and the long waiting times; on the other hand, the biggest virtue of the bismarckian model is the plenty of choice, even though it does not score so well in cost control (Bevan et al. 2010; Or et al. 2010; van der Zee and Kroneman 2007).

Given the dominance of these two models, it would be interesting to see how they compare in a series of health indicators. To help us with this exercise, changes in information technology and associated advances in measurement methodology in the last decade made a lot easier and cheaper to collect and process information, and several countries have developed national repositories of health information or national performance assessment programmes (Papanicolas 2013). One can easily access data from the OECD, the European Commission, the Commonwealth Fund or the World Health

Organisation (WHO), although the comparative performance assessment initiatives are still in its earliest stages, with many challenges still existing in the implementation of comparative schemes, as discussed by Irene Papanicolas and Peter Smith in their work of 2013 for the European Observatory on Health Systems and Policies (Papanicolas 2013).

Over the last years, some authors have tried to address this comparison between the two models. Zee and Kroneman do it in 2007 (van der Zee and Kroneman 2007), using indicators from 17 countries featuring three aspects related to health – health outcomes, health expenditure and population satisfaction. For such, they resorted to the OECD health data base 2006 and WHO health for all database 2006 and to the Eurobarometer studies from 1996, 1997 and 1999. As mentioned in the introduction of their work, few times this subject has been addressed until then, except for a work of Javier Elola (that used, in 1996, data of 1992 to similar indicators and did not find any differences in the health outcomes between the two models, but concluded that the beveridgean model allowed for better cost control and the bismarckian model for better population satisfaction) and for a chapter of the Saltman and Figueras' book (that compared the two models in 2004 for a panoply of health outcomes indicators, not inferring the superiority of any model – they say it depends on the assessed parameter-, further concluding that the bismarckian model is slightly inferior in terms of "equity", but superior in population satisfaction rates). In their work, Zee and Kroneman try to understand how the indicators behave over several years, and their results show that overall mortality rates and life expectancy have been performing better in the Bismarck model after 1980, and that for infant mortality the rates converged between the two types of systems, existing no differences since that year. In line with the previous studies, they conclude that population satisfaction rates are higher in the bismarckian model, but the latter is more expensive, while the beveridgean model allows for better cost control. In 2010, Or, Z et all have investigated the matter too (Or et al. 2010), using a *pool* of 5 countries (Denmark, England, France, Germany and Sweden). The authors analyse the health systems' performance and try to explore possible key parameters of these systems that may explain the findings. Furthermore, they reflect about the recent reforms in those countries that try to attenuate the weaknesses of the health models – these include the introduction of a *soft gatekeeping* in France and Germany, an extension of the guarantees related to waiting times in Denmark and Sweden, and increased choice of providers in England. Their results for health performance match the previous studies, but introduce a new element based on the Eurobarometer results: the affordability, i.e., how easy it is for users to support health access costs, is lower in the bismarckian model. As reflected by Albert Weale in his commentary on the work of Zeynep Or et al, it seems that "there is a list of objectives that all systems might be thought to pursue, but in practice, given organisational constraints, some will score well on some values, whereas others will score well in different terms" (Weale 2015).

Despite the attempt to implement the aforementioned reforms, these do not seem to have had much impact; in France and Germany, the bigger influence of the specialists has impeded the shift to a scenario where GPs take responsibility for a possible *gatekeeping* process; in the countries that follow the Beveridge model, the reforms have not reached the desirable outcomes too, except for Denmark that successfully lowered waiting times (Or et al. 2010).

More than trying to find differences between the two models, it is important to understand the context of each country, and if there are any other factors that may influence the health outcomes. Thus, this work tries to answer four questions: (1) is the trend of the recent studies maintained? (2) What happens when we adjust these results to the economic strength of the populations (GDP *per capita*)? (3) Are there any differences in health outcomes that are explained by the economic strength of each country's populations rather than by the adopted health model? (4) Have countries with the same health model different health outcomes according to the economic strength of their populations?

Methods

Countries

This study uses data from OECD countries, which were divided in two categories: one including those countries with a health system closer to the classic beveridgean type (type A), in which the financier and the provider are the same; other including bismarckian-like systems or those in which the financier is not the exclusive (or almost exclusive) provider, including the cases of compulsory public health insurance (type B) (table 1). Only countries in which health system has a non-private financing above 90% were considered, in order to ensure that there is a good representativeness of a given model. With the aim of studying the effect of each country's wealth on health outcomes, all OECD countries were categorized according to their GDP per capita (table 2) and its effect on health outcomes was studied. In order to study the effect of the economic capacity of each country on the health outcomes of the countries of the initially defined categories, the first analysis was repeated for type A and type B countries, according to the median of GDP per capita in each group (table 3).

All tables and figures can be accessed in Appendix.

Data source

Both health and economic indicators (GDP per capita) come from the OECD databases available in the context of the "Health at a Glance 2015 - OECD Indicators" report(OECD 2015).

Indicators

The selected indicators try to better reflect the following parameters: (1) health expenditure, (2) resources and productivity, (3) access to care, (4) population outcomes, (5) prevention and (6) long-term care. For *health expenditure*, the indicators of public health expenditure (per capita and as a percentage of GDP), the public share of expenditure on pharmaceuticals, and the percentage of private out-of-pocket expenditure on pharmaceuticals were used. With regard to *resources and productivity*, the indicators used were the consultations per doctor/year (medical productivity), permillage of hospital beds, nurses and magnetic resonance (MR) and computed tomography (CT) scans. To assess *access to care*, the percentage of unmet needs for medical care and medical consultations per person/year were used. With regard to *population outcomes*, life expectancy at birth, permillage of infant mortality, life expectancy and *healthy* life expectancy at age 65 (and the main determinants of the average life expectancy – mortality due to ischaemic heart disease and to cerebrovascular disease) and the percentage of perceived health status as good or very good (in population aged 15 years and over and in those aged 65 years and over) were chosen. To study the results in *prevention*, we analysed the percentage of DTP (diphtheria, tetanus, pertussis), measles and hepatitis B vaccination in children aged 1, the percentage of influenza vaccination for individuals aged 65 years and over, and the rates of breast (by mammogram between 50 and 69 years) and cervical cancer screening (by Pap smear between 20 and 69 years). For *long-term care (LTC)*, the following indicators were used: public expenditure on LTC (as a percentage of GDP), permillage of beds for LTC for people aged 65 years and over and percentage of the population under LTC.

All numerical variables are presented as mean ± standard deviation, with expenditure values presented in US dollars (USD). All GDP values presented are GDP at purchasing power parity (PPP). The majority of the indicators refer to the year 2013 and the most recent data were used in all other cases.

According to the OECD report, data on the percentage of unmet needs for medical care come from two main sources: the European EU-SILC survey (2013), which questioned respondents whether there was any moment in the last 12 months when they felt they needed a medical evaluation but did not receive it, followed by a question about the reason for such occurrence (cases due to economic costs, waiting times and travel distance were covered); the second source is the Commonwealth Fund International Health Policy Survey (2013), which was conducted in 11 countries and asked respondents whether they did not visit the doctor when they had a medical problem, did not have a medical test, treatment or follow-up that was recommended by the doctor, or did not fill prescription for medicines or skipped doses due to economic costs in the last year. Similar questions were also asked in the national survey in the Czech Republic in 2010, and these data were also used.

Statistical analysis

Statistical analysis of the data was done using the IBM SPSS Statistics 24 software. The Mann-Whitney U test was used to compare numerical variables between two categories and the Kruskal-Wallis H to compare between more than two categories. A logistic regression was used to adjust results to GDP per capita. All the differences found were considered statistically significant when $p \leq 0.05$.

Results

Health expenditure

Public health expenditure (both per capita and as a percentage of GDP) is similar in type A and type B models (2953,2±974,8 vs 2567,4±1132,1; p=0,49 and 7,13±1,12 vs 6,57±1,69; p=0,32, respectively). The public share of expenditure on pharmaceuticals is higher in the type B model, although this result has no statistical significance (51,18±8,14 vs 60,87±14,68; p= 0,08); on the other hand, the percentage of private out-of-pocket expenditure on pharmaceuticals is higher in type A model (46,40±8,08 vs 33,05±13,67; p<0,02). The adjustment to GDP per capita does not affect the statistical significance of the results (see table 4).

However, when assessing health expenditure by grouping countries according to their economic capacity, one can see that there is a directly proportional relationship between the GDP per capita and public health expenditure, both per capita and as a percentage of GDP (figure 1). Both the public share of expenditure on pharmaceuticals and the percentage of private out-of-pocket expenditure on pharmaceuticals do not appear to be affected by the country's economic capacity - there are no data for the first quartile in both cases (Figure 1).

Within type A model, although public health expenditure, as a percentage of GDP, is similar between countries with higher and lower economic capacity (6,76±0,61 vs 7,45±1,39; p=0,43), when we look at public health expenditure per capita, it is higher in countries with GDP per capita above the median (2295,7±428,1 vs 3501,1±980,4; p=0,05). Both the public share of expenditure on pharmaceuticals and the percentage of private out-of-pocket expenditure on pharmaceuticals are not affected by the economic capacity of each country within type A model (57,64±4,26 vs 48,60±8,11; p=0,19 and 39,08±10,00 vs 49,33±5,96; p=0,19). In countries with type B model, the behaviour of these indicators is similar between those with GDP per capita above the median and those with GDP per capita equal to or below the median (see table 5).

Resources and productivity

Medical productivity (consultations per doctor/year) is consistently higher in type B model (1377,5±417,6; p<0,001); the hospital bed rate also scores better in this model (3,24±0,65 vs 6,31±2,70; p<0,01). The rate of nurses and MRI and CT scans does not appear to be affected by the model (11,05±4,28 vs 8,90±3,49; p=0,19; 47,94±21,48 vs 48,33±21,22; p=0,98 and 102,64±51,08 vs 121,15±48,23; p =0,53, respectively). The adjustment to GDP per capita does not affect the statistical significance of the results (see table 4).

Medical productivity is lower in richer countries; in fact, countries belonging to the last quartile are the ones with the lowest number of consultations per doctor/year, although there are no data from the first quartile (figure 2). The rate of nurses increases with the increase in the economic capacity of the countries analysed, while the difference between the rate of hospital beds is mainly observed between the poorest countries (first quartile) and the remaining (figure 2). The rate of magnetic resonance imaging and CT scans seems to be independent of the economic capacity of the countries, although there are no data for the first quartile (figure 2).

Among countries with type A model, medical productivity seems to be higher in the poorer countries, although this difference is not statistically significant (1702,5±260,0 vs 1160,8±364,0; p=0,07). The rate of nurses is higher in richer countries (7,10±1,96 vs 14,34±2,22; p=0,004), while rates for hospital beds, MRI scans, and CT scans appear to be similar between the two groups (3,06±0,33 vs 3,39±0,84; p=0,79; 46,60±20,71 vs 48,95±25,17; p=0,86 and 104,23±33,29 vs 101,45±66,90; p=0,99). Again, the results between richer countries and poorer countries, within type B model, point in the same direction; in this case, the difference in medical productivity has statistical significance (see table 5).

Access to care

The percentage of unmet needs for medical care is similar between the two models (2,84±1,88 vs 2,68±2,99; p=0,35), which becomes even more evident after adjusting for GDP per capita (see table 4). In turn, the number of medical consultations per person/year is higher in type B model (1377,5±417,6 vs 2833,5±1454,3; p<0,001). The adjustment to GDP per capita does not affect the statistical significance of the results (see table 4).

As we look at countries with higher GDP per capita, the percentage of unmet needs for medical care decreases, as well as the number of medical consultations per person/year (there are no data for the first quartile in both cases) (figure 3). Within type A model, the abovementioned percentage does not appear to be affected by the economic capacity (3,13±2,80 vs 2,65±1,25; p=0,91), contrary to what happens in type B model (4,30±3,61 vs 1,07±0,62; p<0,02). In both type A and type B models, economic capacity does not seem to affect the number of medical consultations per person/year (5,4±1,6 vs 4,0±1,2; p=0,25 e 9,7±3,2 vs 6,9±1,7; p=0,17, respectively).

Population outcomes

Life expectancy at birth seems to be similar in both models (81,6±0,9 vs 80,7±2,2; p=0,58), while the infant mortality rate appears to be higher in type B model (2,71±0,87 vs 3,40±1,00; p=0,05), although this difference is not statistically significant, when adjusted to GDP per capita (see table 4). Although the life expectancy at age 65 practically does not present differences between the two models (20,0±0,6 vs 19,6±1,5; p=0,95), *healthy* life expectancy at age 65 is consistently higher in countries adopting type A model (11,3±2,6 vs 8,4±2,0; p<0,02). The mortality rate due to ischaemic heart disease and the mortality rate due to cerebral vascular disease are not affected by the adopted model (100,22±35,67 vs 119,18±99,93; p=0,61 e 60,26±11,72 vs 67,95±30,68; p=0,64, respectively), as well as the rates of perceived health status as good or very good, in individuals aged 15 years and over and in those aged 65 and over (72,65±11,35 vs 67,08±14,61; p=0,28 e 51,22±20,70 vs 39,90±20,07; p=0,20, respectively). Except for the infant mortality rate, the adjustment to GDP per capita does not affect the statistical significance of the results (see table 4).

When countries are categorized according to quartiles of GDP per capita, one can see that all of the abovementioned indicators are influenced by countries' economic capacity (with the exception of ischaemic heart disease mortality), with richer countries scoring better (figure 4). Within the type A countries, the differences are found in the infant mortality rate and healthy life expectancy at age 65 (although not statistically significant; 3,22±0,77 vs 2,28±0,75; p=0,08 e 9,2±1,3 vs 12,6±2,4; p=0,07, respectively), while type B countries show statistically significant differences between the poorer and richer countries (with the advantage of the latter) with regard to healthy life expectancy at age 65 (7,3±2,0 vs 9,6±1,5; p=0,05) and the perception of good or very good health status (both in individuals aged 15 years and over, and in individuals aged 65 and over; 59,71±14,68 vs 76,26±8,19; p=0,006 e 25,92±10,64 vs 57,58±14,02; p<0,001, respectively) (see table 5).

Prevention

No differences were found between the two models regarding the DTP (95,45±2,42 vs 96,44±4,03; p=0,07), measles (93,64±3,01 vs 94,72±5,43; p=0,13) and hepatitis B (92,00±8,99 vs 91,79±8,73; p=0,66) vaccination rate, which became particularly evident after adjusting for GDP per capita (see table 4). Also, the influenza vaccination rate for individuals aged 65 years and over did not present differences between the two models (51,74±15,26 vs 46,16±20,55; p=0,59). The screening rate for breast cancer by mammogram (between 50 and 69 years) is higher in type A model (72,91±7,68 vs 59,99±13,72; p=0,01), while for the screening of cervical cancer, the difference found is not statistically significant (67,42±11,47 vs 60,75±12,80; p=0,16) (see table 4).

The first-year vaccination rate (DTP, measles and hepatitis B) is substantially lower in countries belonging to the first quartile of GDP per capita, but appears to stabilize from the second quartile on; with regard to influenza vaccination, this stabilization occurs from the third quartile on (figure 5). The screening rate for breast and cervical cancers increases as we move to higher quartiles, although this difference is only statistically significant in the latter case (figure 5). Within type A, there appear to be no differences between the richest and poorest countries in relation to the prevention indicators mentioned above (see table 5). On the other hand, this difference is evident in the case of type B model, in which countries with lower GDP per capita have higher rates of vaccination in the first year - cases of measles and hepatitis B (96,70±3,23 vs 92,25±6,76; p<0,03); differences in the case of DTP vaccination have no statistical significance (97,90±1,85 vs 94,63±5,32; p=0,12). Even though influenza vaccination and breast cancer and uterine cancer screenings appear to be superior in richer countries, the differences found are not statistically significant (see table 5).

Long-term care

Respecting LTC, public expenditure as a percentage of GDP appears to be higher in type A model, although there is no statistical significance in this analysis (1,51±1,01 vs 0,93±0,72; p=0,29; p2=0,15), nor reflex of that hypothetical higher expenditure, in terms of the percentage of the population under LTC (2,18±1,36 vs 2,39±1,20; p=0,70) or the rate of beds for that purpose for the population aged 65 and over (53,70±15,24 vs 51,65±13,83; p=0,86).

When these indicators are assessed against GDP per capita, to the detriment of the adopted model, public expenditure on LTC increases with progression in quartiles, although this does not result in statistically significant differences in the percentage of the population under LTC or in the rate of beds for LTC for individuals aged 65 years and over (figure 6).

The difference in public investment in LTC between rich and poor countries is particularly evident in type B model (0,50±0,40 vs 1,55±0,64; p=0,001), and no differences were found within type A model (0,41±0,36 vs 1,95±0,80; p=0,19); however, in none of the models are there differences in the other two parameters analysed for LTC (see table 5).

Discussion

Health expenditures

The first goal of this work is to compare type A and type B models (with an adjustment to GDP per capita), trying to understand if the trend of the last comparative studies is maintained on one hand, and which differences can be found that have not been studied yet, on the other. Cost control has consistently been singled out as one of the strengths of the type A model, although this study does not demonstrate this; in fact, not only are there no statistically significant differences between the two models in terms of public health expenditure (both per capita and as a function of GDP), as the average of these expenses is even higher in the type A model. One possible explanation could be the awakening of a global financial and economic crisis, which has consistently suppressed the growth of public health expenditure in recent years and has eventually brought the countries of the two models closer together.

Furthermore, Or Z. et al had come to the conclusion that the affordability reported by the populations was favourable to the Beveridge model, trying to draw a parallel with the out-of-pocket expenditure, which was higher in countries with the Bismarck model (except for Denmark, where this parallelism apparently cannot be done); although the present study does not use Eurobarometer data, one can observe that out-of-pocket expenditure on pharmaceuticals is significantly higher in type A model, which seems to go against previous results. This may have several explanations; first, it can be explained by a methodological difference - in fact, this analysis is based on results from 29 countries, which significantly widens the sample, compared to the study by Or Z. et al; secondly, although the affordability is not a completely reliable indicator of the real difficulties in dealing with out-of-pocket payments, neither is the one used in this study - out-of-pocket payments differ fairly between countries (while most of these payments are actually intended for outpatient medicines in certain countries, such as Poland, the Czech Republic, Hungary or Canada, in other countries such as Luxembourg, Belgium or Switzerland, most of these payments are intended for curative care and, in Portugal, for copayments of medicines and especially for dental care).

Resources and productivity

Medical productivity is higher in type B model, which is much due to the fact that, in countries that adopt this model, there is a fee-for-service scheme, which is a strong incentive to produce consultations, in contrast to countries with type A, where a fixed wage independent of productivity is established. The explanation for the higher rate of hospital beds in type B model may be the greater profit associated with a greater number of hospitalizations.

Access to care

Regarding access to care, this study showed that access measured by the number of medical consultations per person/year scores significantly better in type B model; this may reflect the greater ease of access to specialties (historically recognized to the bismarckian model); despite this, there are no differences regarding the rates of unmet needs for medical care, which may point to a greater sensitivity on the part of the patients in these countries, fuelled by the aforementioned ease of access.

Population outcomes

Although Eurobarometer data are not used for population satisfaction, which is often recognized as being higher in the bismarckian model, the OECD report provides information on the percentage of the population that has a perception of their health status as good or very good, and this study does not find differences between the two models, in both age groups; despite this, it should be noted that there is a tendency (not statistically significant) for a better perception of health status in individuals aged 65 years and over in type A model, which may be related to another parameter analysed here which also scores better in this model - *healthy* life expectancy at age 65. On the other hand, and in line with what is stated in the OECD report itself, it is necessary to admit that these data is always dependent on the rigor with which the questions are asked and the answers obtained in the questionnaires carried out in the different countries, and on social and cultural factors; moreover, we might think that, because the older population generally reports worse health, a hypothetical predominance of countries with an older population in the type B model could influence the results; however, this does not seem to happen - in fact, although we have countries with a large percentage of the elderly population belonging to the type B model, such as Japan, South Korea or Germany, this also happens with type A model in countries such as Spain, Italy or Portugal; to support this reasoning, countries that follow the type B model, such as Israel or Australia, have the lowest rate of elderly population among the countries analysed (OECD 2015).

There were no differences in life expectancy at birth, and these results do not completely coincide with those obtained by Zee and Kroneman, who pointed to superiority in the Bismarck model after 1980; nevertheless, in that study, the superiority was only of 0.5 years, and if we analyse those data carefully, we notice that in the last few years there was a slight period in which the Beveridge model was slightly superior, and both models are progressing for an increase in average life expectancy at almost the same rate; the most recent data from the present study again show the type A model, on average, slightly better, but without statistically significant differences; actually, this does not seem to be an indicator that differentiates the two models. With regard to infant mortality, the trend towards higher values in type B model may partly reflect different methods in registration practices for very premature infants; although the OECD report used a 22-week minimum threshold in most countries, this was not possible in certain countries such as Australia or Canada, which may have slightly overestimated the values on the type B model side. Furthermore, infant mortality in the more developed countries is greatly affected by at least two factors: the rate of assisted reproduction and the ability to carry out at-risk pregnancies (often with preterm birth). Neonates, in these conditions, have a significantly higher risk of death in the early lifetimes. As child mortality rates in these countries are already at very low levels, any increase due to these conditions may be significant.

Prevention

In terms of prevention, the differences are mainly found for screening for breast (with statistical significance) and cervical cancer; this can be explained by the fact that, in countries that follow type A model, primary health care plays a greater role in the national health scheme, which may allow for a more effective follow-up; plus, some countries belonging to the type B model, such as Israel or Switzerland, do not have organized cervical cancer screening programs because of its low incidence. Despite the difference regarding breast cancer, it is expected that this gap will decrease over the next few years, as some countries with very low screening rates at the beginning of the century, such as a South Korea or a Slovak Republic (with a type B model), have been progressively increasing those rates, while countries where they were already high, such as Finland, Norway or Ireland (type A model), have been reducing them slightly, mainly due to recent concerns about false-positive results, over-diagnosis and over-treatment (which even led WHO to re-evaluate screening recommendations (WHO | WHO position paper on mammography screening 2014)).

Long-term care

With regard to the LTC, the health model does not seem to affect the investment in this area, which seems scarce in view of demographic trends in most countries. In fact, it can be expected that in either model this investment will increase, and type A countries seem to have some advantage (as can be seen from the non-statistically significant higher trend in terms of public expenditure on LTC, as a function of GDP); one may speculate whether the equity pillars of the beveridgean model may have some effect in this matter in the future, by attenuating the effect of adverse selection.

Analysis as a function of economic capacity

The results obtained when studying the indicators according to the economic capacity of the various countries allow us to draw some conclusions. In terms of health expenditure, it is possible to conclude not only that the richer a country is, the greater its expenditure in absolute terms (as would be expected), but also that a greater proportion of its wealth is devoted to health, what shows us the increased importance given to health in these countries; on the other hand, countries in the second and third quartiles have the best (sometimes almost the best) results in terms of medical productivity, population outcomes (life expectancy at birth, infant mortality, life expectancy at age 65 and healthy life expectancy ate age 65) and prevention by vaccination (DTP, measles and hepatitis B in the first year), being only surpassed by the fourth quartile countries in terms of access (medical consultations per person/year and rate of unmet needs for medical care), screening prevention (breast and cervical cancer) and investment in LTC, although not all of these latter results have statistical significance. From this we can conclude two things: first, it seems undeniable that a greater economic capacity is capable of ensuring better results, with the poorer countries having more difficulty competing with the rest; however, it is also interesting to note that there seems to be a point where economic capacity ceases to play such a preponderant role in health outcomes, and that this is somewhere between the second and third quartiles.

Analysis as a function of economic capacity, per model

Within type A model, there are practically no statistically significant differences between the poorest and richest countries; some indicators show a non-statistically significant trend that is in line with the results of analysis by quartiles of GDP per capita. In type B model, the same is true for public health expenditure per capita, although other differences are also evident; in fact, poorer countries seem to score significantly worse in terms of access (measured by unmet needs for medical care rate) and population outcomes (healthy life expectancy at age 65 and perceived health status as good or very good); some indicators score better in the poorer countries within type B model, such as medical productivity (which shows a similar trend, though not statistically significant, in type A model) and prevention by vaccination (perhaps the appearance of movements that go against vaccination of children, associated with the greater "liberalism" of non-Beveridge systems, may have some influence in this matter).

Conclusions

The present study shows that, increasingly, an analysis based on the typology of the health model per se becomes less relevant if other important variables, such as the economic capacity of each country, are not taken into account. In fact, the different models seem to converge more than ever and the differences found in a simple analysis are more difficult to find. Among these, medical productivity and ease of access to health care seem to be the most evident, and are favourable to type B model (non-beveridgean). However, it is also in this model that the poorest countries have worse results, so that they will be able to more easily amortize social differences in relation to the richer countries in type A model.

Health outcomes, in turn, are influenced much more clearly by the economic capacity of each country than by the adopted model, and this study showed that there appears to be a certain amount of GDP per capita, between the second and third quartiles, which ensures the best results, and that an additional increase in GDP per capita does not offer much additional benefit.

Study limitations

Some limitations of this study deserve to be emphasized, namely the fact that it uses indicators referring to a point in time; in fact, most of the indicators refer specifically to the year 2013, while in others the information for that year does not exist and the most recent available data have been used. Also, data from certain countries are missing when it comes to certain indicators, mainly regarding the poorest belonging to the first quartile of GDP per capita. This fact has reduced the power of the statistical analysis performed.

On the other hand, the indicators that appeared most relevant within those available in the OECD report were chosen, but others could have been used; although many of the indicators used by this work are identified as areas of concern for comparison in the Health System Performance Comparison report for the European Observatory on Health Systems and Policies, other areas have not been addressed, including morbidity, avoidable mortality, population risk factors or respect for the dignity of the patient (Papanicolas 2013). When developing such a study, it is important to notice that one should establish a limit of parameters to be analysed and that if, on the one hand, a greater number of indicators allows a more comprehensive and realistic view of the various factors that influence a given health system, on the other, that makes it difficult to identify specific areas for action and implementation of short-term reforms.

Another aspect that should be highlighted is the analysis carried out according to GDP per capita – although the results of this study attribute a central role to this variable in population health outcomes, the truth is that other factors that were not addressed, such as the architecture of health systems in some countries or access to the "state of the art", can have an influence on the analysed parameters (although these factors are in some way interconnected with the economic capacity of a population).

Therefore, it should be noted that although it is desirable to draw conclusions from such studies and to make generalizations, it must be borne in mind that there are still several obstacles to these comparative schemes, not only in the collection of information (mainly the most subjective, concerning the well-being and dignity of individuals), but also in the interpretation of this information (and the value it can add).

Appendix

Type A	Type B
Denmark	Australia
Finland	Austria
Iceland	Belgium
Ireland	Canada
Italy	Czech Republic
Norway	France
New Zealand	Germany
Portugal	Greece
Spain	Hungary
Sweden	Israel
United Kingdom	Japan
	Luxembourg
	Netherlands
	Poland
	Slovak Republic
	Slovenia
	South Korea
	Switzerland

Table 1 – Countries distribution per model

1st Quartile	2nd Quartile	3rd Quartile	4th Quartile
Brazil	Czech Republic	Belgium	Australia
Chile	Estonia	Canada	Austria
China	Greece	Finland	Denmark
Colombia	Hungary	France	Germany
Costa Rica	Israel	Iceland	Ireland
India	Lithuania	Italy	Luxembourg
Indonesia	Poland	Japan	Netherlands
Latvia	Portugal	New Zealand	Norway
Mexico	Russian Federation	South Korea	Sweden
South Africa	Slovak Republic	Spain	Switzerland
Turkey	Slovenia	United Kingdom	United States

Table 2 – Countries distribution in quartiles, per GDP per capita

Type A		Type B	
> median	≤ median	> median	≤ median
Denmark	Italy	Australia	Czech Republic
Finland	New Zealand	Austria	France
Iceland	Portugal	Belgium	Greece
Ireland	Spain	Canada	Hungary
Norway	United Kingdom	Germany	Israel
Sweden		Luxembourg	Japan
		Netherlands	Poland
		Switzerland	Slovak Republic
			Slovenia
			South Korea

Table 3 – Countries distribution as a function of GDP per capita, per model

Indicator	Type A	Type B	P	P2
Health expenditure				
Public health expenditure (per capita)	2953,2±974,8	2567,4±1132,1	0,49	0,30
Public health expenditure (as a % of GDP)	7,13±1,12	6,57±1,69	0,32	0,34
Public share of expenditure on pharmaceuticals (%)	51,18±8,14	60,87±14,68	0,08	0,07
Private out-of-pocket expenditure on pharmaceuticals (%)	46,40±8,08	33,05±13,67	<0,02	<0,03
Resources and productivity				
Medical productivity (consultations per doctor/year)	1377,5±417,6	2833,5±1454,3	<0,001	<0,03
Nurses (‰)	11,05±4,28	8,90±3,49	0,19	0,12
Hospital beds (‰)	3,24±0,65	6,31±2,70	<0,01	0,01
MR scans (‰)	47,94±21,48	48,33±21,22	0,98	0,99
CT scans (‰)	102,64±51,08	121,15±48,23	0,53	0,40
Access to care				
Medical consultations per person/year	4,66±1,53	8,41±2,90	<0,001	<0,02
Unmet needs for medical care (%)	2,84±1,88	2,68±2,99	0,35	0,83
Population outcomes				
Life expectancy at birth (years)	81,6±0,9	80,7±2,2	0,58	0,19
Infant mortality (‰)	2,71±0,87	3,40±1,00	<0,05	0,08
Life expectancy at age 65 (years)	20,0±0,6	19,6±1,5	0,95	0,40
Healthy life expectancy at age 65 (years)	11,3±2,6	8,4±2,0	<0,02	0,02
Perceived health status as good or very good (% of population aged 15 years and over)	72,65±11,35	67,08±14,61	0,28	0,30
Perceived health status as good or very good (% of population aged 65 years and over)	51,22±20,70	39,90±20,07	0,20	0,15
Mortality due to ischaemic heart disease (per 100 000)	100,22±35,67	119,18±99,93	0,61	0,58
Mortality due to cerebrovascular disease (per 100 000)	60,26±11,72	67,95±30,68	0,64	0,43
Prevention				
DTP (diphtheria, tetanus, pertussis) (% of children aged 1)	95,45±2,42	96,44±4,03	0,07	0,48
Measles vaccination in the first year (% of children aged 1)	93,64±3,01	94,72±5,43	0,13	0,58
Hepatitis B vaccination (% of children aged 1)	92,00±8,99	91,79±8,73	0,66	0,89
Influenza vaccination (% of population aged 65 and over)	51,74±15,26	46,16±20,55	0,59	0,46
Mammography screening (% of women aged 50-69)	72,91±7,68	59,99±13,72	0,01	0,02
Cervical cancer screening (% of women aged 20-69)	67,42±11,47	60,75±12,80	0,16	0,18
Long-term care				
Public expenditure on long-term care (as a % of GDP)	1,51±1,01	0,93±0,72	0,29	0,15
Beds for long-term care (per 1000 people aged 65 years and over)	53,70±15,24	51,65±13,83	0,86	0,79
Population under long-term care (%)	2,18±1,36	2,39±1,20	0,70	0,62

Table 4 – Comparison between type A model and type B model in the various indicators analysed (P), with subsequent adjustment to GDP per capita (P2).

Indicator	Type A			Type B		
	≤ median	> median	P	≤ median	> median	P
Health expenditure						
Public health expenditure (per capita)	2295,7±428,1	3501,1±980,4	0,05	1778,6±768,6	3553,4±594,3	0,001
Public health expenditure (as a % of GDP)	6,76±0,61	7,45±1,39	0,43	5,85±1,63	7,46±1,35	0,10
Public share of expenditure on pharmaceuticals (%)	57,64±4,26	48,60±8,11	0,19	57,09±13,60	65,13±15,56	0,28
Private out-of-pocket expenditure on pharmaceuticals (%)	39,08±10,00	49,33±5,96	0,19	36,75±14,75	28,90±11,87	0,32
Resources and productivity						
Medical productivity (consultations per doctor/year)	1702,5±260,0	1160,8±364,0	0,07	3513,6±1653,9	2068,3±666,2	<0,04
Nurses (‰)	7,10±1,96	14,34±2,22	0,004	6,74±2,21	11,60±2,88	0,001
Hospital beds (‰)	3,06±0,33	3,39±0,84	0,79	6,89±3,05	5,48±2,03	0,42
MR scans (‰)	46,60±20,71	48,95±25,17	0,86	44,51±22,04	52,63±20,83	0,37
CT scans (‰)	104,23±33,29	101,45±66,90	0,99	120,17±49,91	122,26±49,67	0,99
Access to care						
Medical consultations per person/year	5,4±1,6	4,0±1,2	0,25	9,7±3,2	6,9±1,7	0,17
Unmet needs for medical care (%)	3,13±2,80	2,65±1,25	0,91	4,30±3,61	1,07±0,62	<0,02
Population outcomes						
Life expectancy at birth (years)	81,9±1,1	81,4±0,7	0,66	79,9±2,8	81,6±0,7	0,36
Infant mortality (‰)	3,22±0,77	2,28±0,75	0,08	3,35±1,22	3,46±0,70	0,76
Life expectancy at age 65 (years)	20,3±0,7	19,73±0,40	0,25	19,1±1,9	20,1±0,5	0,32
Healthy life expectancy at age 65 (years)	9,2±1,3	12,6±2,4	0,07	7,3±2,0	9,6±1,5	0,05
Perceived health status as good or very good (% of population aged 15 years and over)	69,42±15,70	75,33±6,45	0,43	59,71±14,68	76,26±8,19	0,006
Perceived health status as good or very good (% of population aged 65 years and over)	43,91±28,59	57,32±10,24	0,25	25,92±10,64	57,58±14,02	<0,001
Mortality due to ischaemic heart disease (per 100 000)	85,20±35,34	112,75±33,65	0,33	143,68±129,14	88,56±29,72	0,97
Mortality due to cerebrovascular disease (per 100 000)	63,90±16,53	57,23±5,64	0,54	84,80±32,23	46,89±6,12	0,01
Prevention						
DTP (diphtheria, tetanus, pertussis) (% of children aged 1)	95,80±2,28	95,17±2,71	0,79	97,90±1,85	94,63±5,32	0,12
Measles vaccination in the first year (% of children aged 1)	94,00±3,08	93,33±3,20	0,79	96,70±3,23	92,25±6,76	<0,03
Hepatitis B vaccination (% of children aged 1)	95,75±2,22	84,50±14,85	0,28	94,57±9,13	89,00±7,98	0,05
Influenza vaccination (% of population aged 65 and over)	61,00±10,78	42,48±13,90	0,06	38,14±22,34	56,19±13,33	0,10
Mammography screening (% of women aged 50-69)	72,20±5,91	73,61±9,83	0,84	55,73±13,85	65,31±12,32	0,17
Cervical cancer screening (% of women aged 20-69)	63,82±15,59	70,42±6,71	0,79	57,10±14,14	64,86±10,48	0,17
Long-term care						
Public expenditure on long-term care (as a % of GDP)	0,41±0,36	1,95±0,80	0,19	0,50±0,40	1,55±0,64	0,001
Beds for long-term care (per 1000 people aged 65 years and over)	43,61±17,06	60,42±10,39	0,11	45,55±14,94	58,53±8,93	0,20
Population under long-term care (%)	1,73±1,04	2,48±1,56	0,35	2,20±1,06	2,59±1,37	0,80

Table 5 – Comparison between countries with GDP per capita ≤ median and GDP per capita > median, per model.

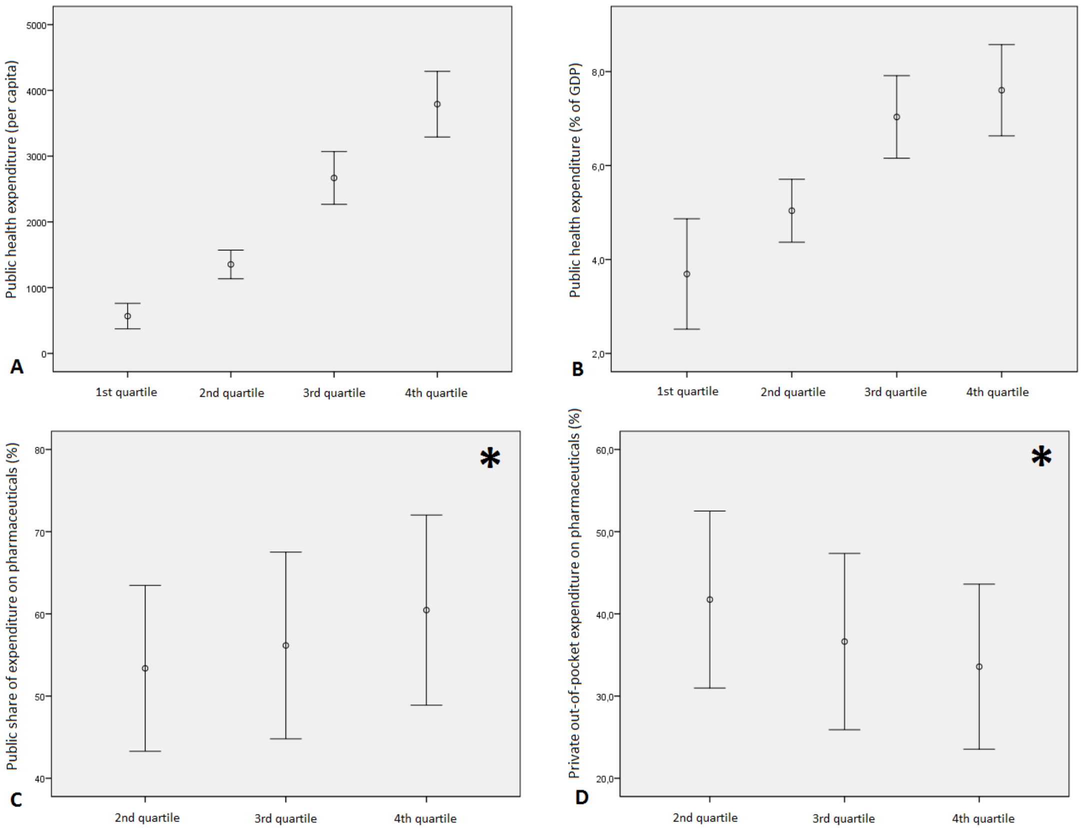

Figure 1 – (A) Public health expenditure per capita (p<0,001), (B) public health expenditure as a percentage of GDP (p<0,001), (C) public share of expenditure on pharmaceuticals (%) (p=0,63) and (D) private out-of-pocket expenditure on pharmaceuticals (%) (p=0,53), as a function of GDP per capita.

*No data for the first quartile.

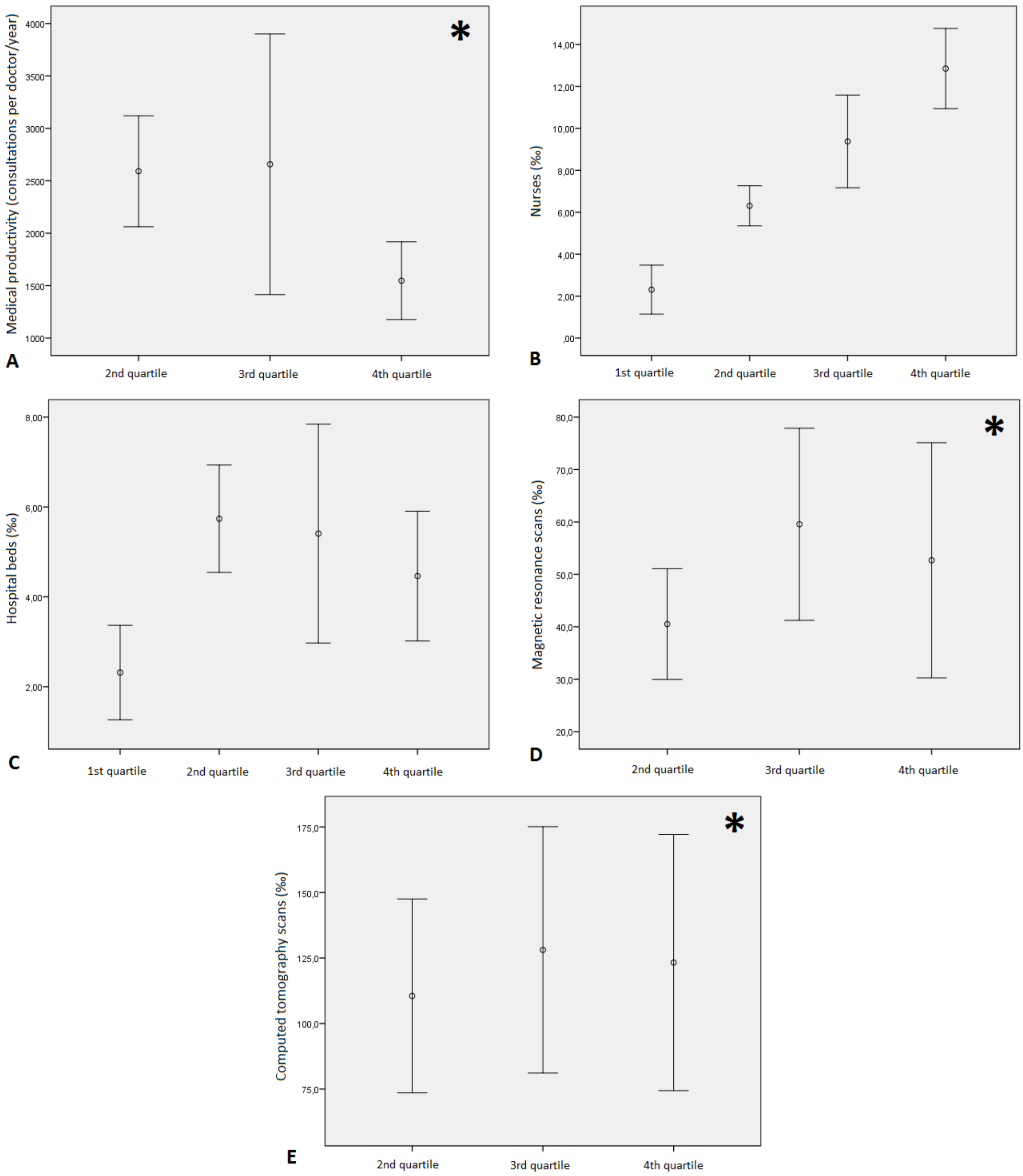

Figure 2 – (A) Medical productivity (number of consultations per doctor/year) (p<0,02), and permillage of (B) nurses (p<0,001), (C) hospital beds (p=0,001), (D) magnetic resonance scans (p=0,22) and (E) computed tomography scans (p=0,72), as a function of GDP per capita.

*No data for the first quartile.

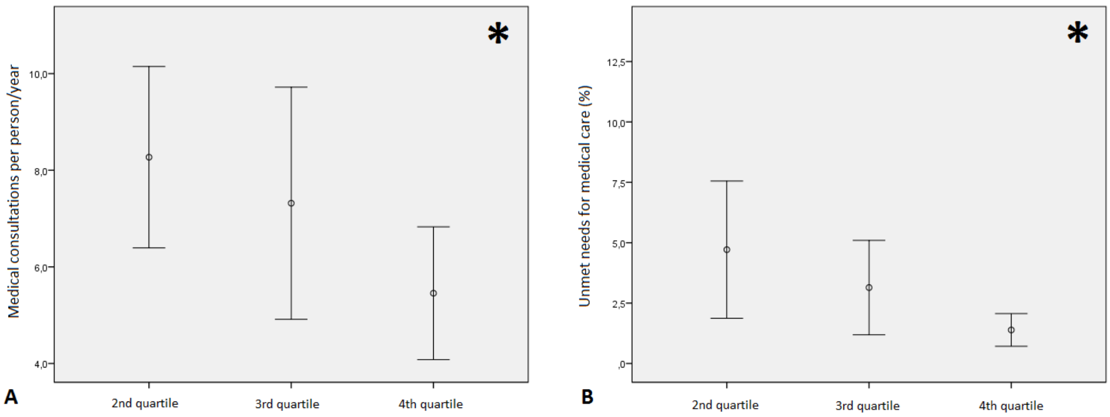

Figure 3 – (A) Medical consultations per person/year (p=0,07) and (B) percentage of unmet needs for medical care (p=0,02), as a function of GDP per capita.

*No data for the first quartile.

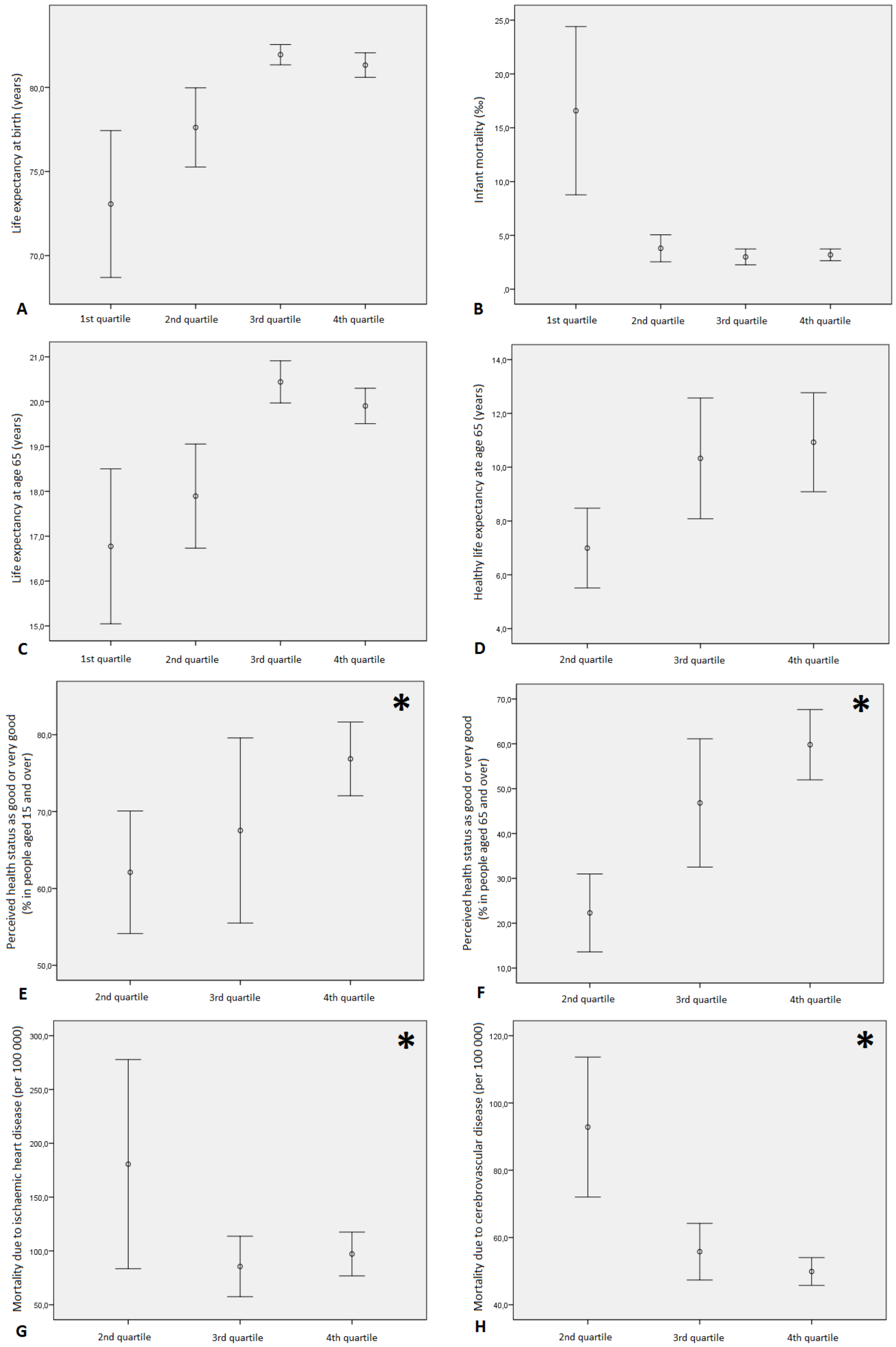

Figure 4 – (A) Life expectancy at birth (p<0,001), (B) permillage of infant mortality (p<0,001), (C) life expectancy at age 65 (p<0,001), (D) *healthy* life expectancy at age 65 (p=0,007), percentage of individuals aged (E) 15 years and over or (F) 65 years and over that perceive their health status as good or very good (p<0,02 e p<0,001, respectively) and mortality, per 100 000, due to (G) ischaemic heart disease (p=0,21) and to (H) cerebrovascular disease (p=0,002), as a function of GDP per capita.

*No data for the first quartile.

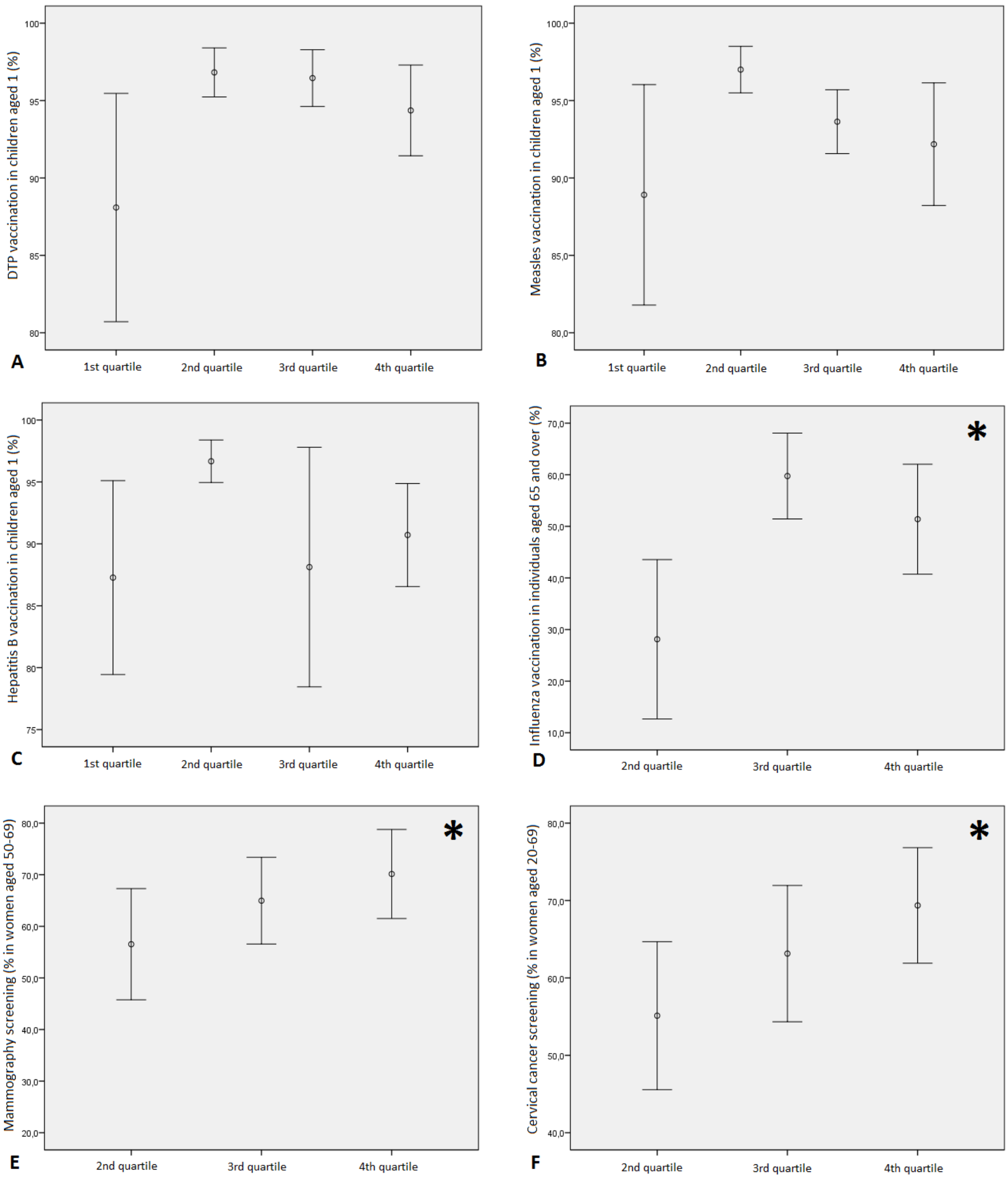

Figure 5 – Percentage of (A) DTP (diphtheria, tetanus, pertussis), (B) measles and (C) hepatitis B vaccination in children aged 1 (p=0,03, p=0,02 e p <0,05, respectively), (D) percentage of influenza vaccination in individuals aged 65 and over (p=0,005), percentage of (E) mammography screening in women aged 50-69 and of (F) cervical cancer screening in women aged 20-69 (p=0,12 and p=0,04, respectively), as a function of GDP per capita.

*No data for the first quartile.

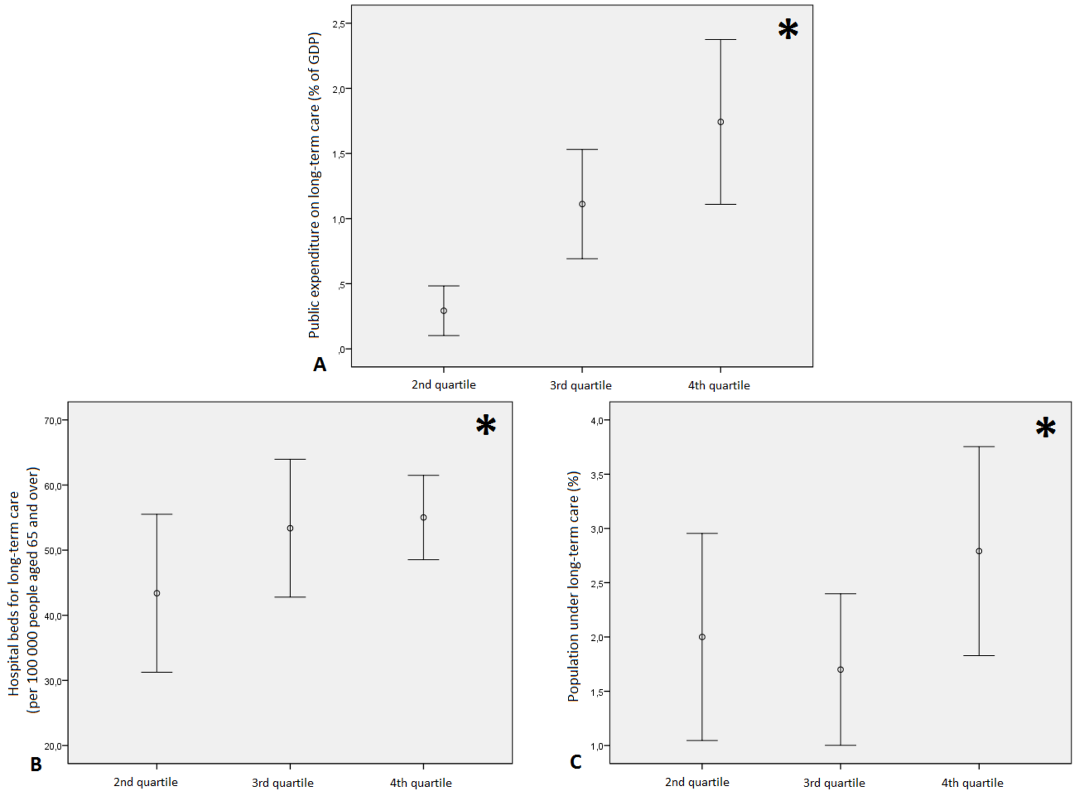

Figure 6 – (A) Public expenditure on LTC, as a percentage of GDP (p<0,001), (B) hospital beds for LTC, per 1000 individuals aged 65 years and over (p=0,26) and (C) percentage of population under LTC (p=0,17), as a function of GDP per capita.

*No data for the first quartile.

References

Antoun, J., Phillips, F., & Johnson, T. (2011). Post-Soviet transition: improving health services delivery and management. *Mt Sinai J Med, 78*(3), 436-448, doi:10.1002/msj.20261.

Bevan, G., Helderman, J. K., & Wilsford, D. (2010). Changing choices in health care: implications for equity, efficiency and cost. *Health Econ Policy Law, 5*(3), 251-267, doi:10.1017/S1744133110000022.

Beveridge, W. (2000). Social insurance and allied services. 1942. *Bull World Health Organ, 78*(6), 847-855.

E. Mossialos, M. W., R. Osborn, and D. Sarnak (eds.) (January 2016). *International Profiles of Health Care Systems, 2015*: The Commonwealth Fund.

Joel, M. E., & Dufour-Kippelen, S. (2002). Financing systems of care for older persons in Europe. *Aging Clin Exp Res, 14*(4), 293-299.

Kruk, M. E. (2013). Universal health coverage: a policy whose time has come. *BMJ, 347*, f6360, doi:10.1136/bmj.f6360.

Lameire, N., Joffe, P., & Wiedemann, M. (1999). Healthcare systems--an international review: an overview. *Nephrol Dial Transplant, 14 Suppl 6*, 3-9.

Lee, D. S., & Mir, H. R. (2014). Global systems of health care and trauma. *J Orthop Trauma, 28 Suppl 10*, S8-10, doi:10.1097/BOT.0000000000000213.

Lember, M. (2002). A policy of introducing a new contract and funding system of general practice in Estonia. *Int J Health Plann Manage, 17*(1), 41-53, doi:10.1002/hpm.651.

Liu, T., & Sun, L. (2015). An apocalyptic vision of ageing in China: Old age care for the largest elderly population in the world. *Z Gerontol Geriatr, 48*(4), 354-364, doi:10.1007/s00391-014-0816-5.

Moore, W. (2008). Two hundred and thirty years before Beveridge. *BMJ : British Medical Journal, 337*(7660), 56-56, doi:10.1136/bmj.a571.

OECD (2015). *Health at a Glance 2015*: OECD Publishing.

Or, Z., Cases, C., Lisac, M., Vrangbaek, K., Winblad, U., & Bevan, G. (2010). Are health problems systemic? Politics of access and choice under Beveridge and Bismarck systems. *Health Econ Policy Law, 5*(3), 269-293, doi:10.1017/S1744133110000034.

Papanicolas, I. S., P. (Ed.). (2013). *Health System Performance Comparison: An Agenda For Policy, Information And Research* (European Observatory on Health Systems and Policies Series): Open University Press.

Roemer, M. I. (1997). Social insurance for health service. *Scand J Soc Med, 25*(2), 65-66.

van der Zee, J., & Kroneman, M. W. (2007). Bismarck or Beveridge: a beauty contest between dinosaurs. *BMC Health Serv Res, 7*, 94, doi:10.1186/1472-6963-7-94.

Weale, A. (2015). Reflecting on 'Are health problems systemic? Politics of access and choice under Beveridge and Bismarck systems'. *Health Econ Policy Law, 10*(4), 431-435, doi:10.1017/S1744133115000171.

WHO | WHO position paper on mammography screening (2014).

Ziller, S., Eaton, K. E., & Widstrom, E. (2015). The healthcare system and the provision of oral healthcare in European Union member states. Part 1: Germany. *Br Dent J, 218*(4), 239-244, doi:10.1038/sj.bdj.2015.95.

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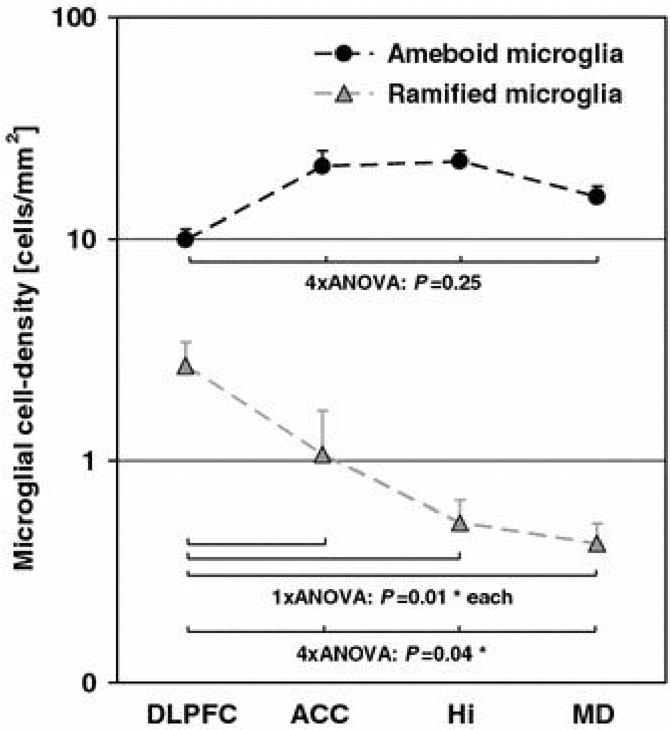

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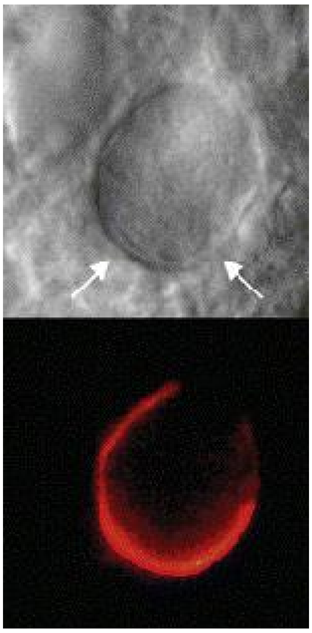

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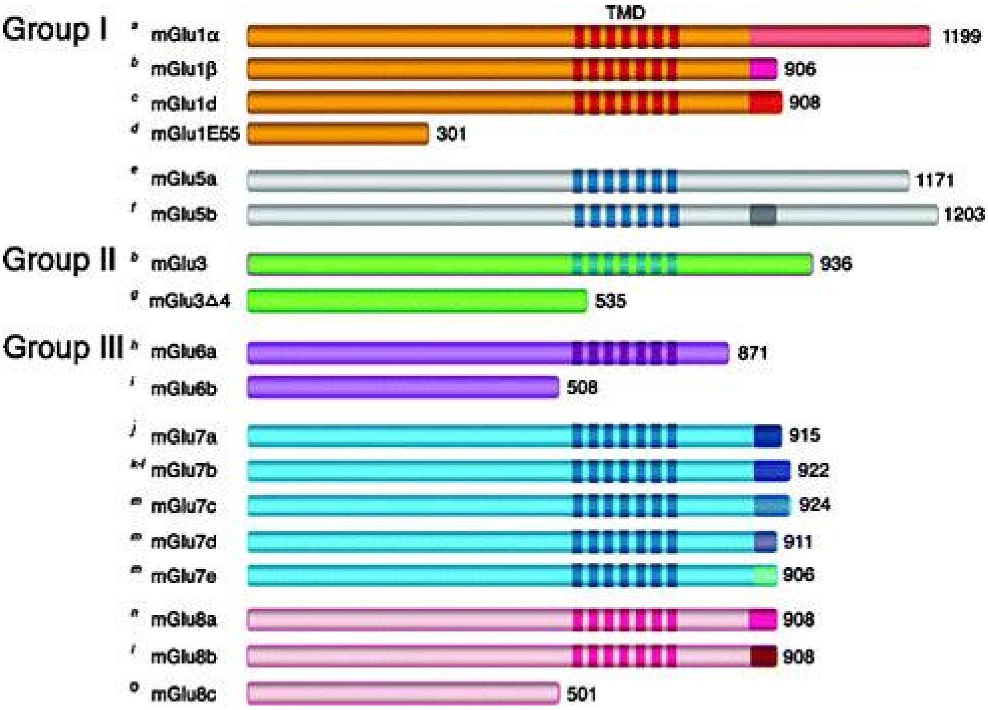

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