Original Article

Ranking of Palliative Care Development in the Countries of the European Union

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Abstract

Context. There is growing interest in monitoring palliative care (PC) development internationally. One aspect of this is the ranking of such development for comparative purposes.

Objectives. To generate a ranking classification and to compare scores for PC development in the countries of the European Union, 2007 and 2013. PC "development" in this study is understood as a combination of the existence of relevant services in a country ("resources") plus the capacity to develop further resources in the future ("vitality").

Methods. "Resources" comprise indicators of three types of PC services per population (inpatient palliative care units and inpatient hospices, hospital support teams, and home care teams). "Vitality" of PC is estimated by numerical scores for the existence of a national association, a directory of services, physician accreditation, attendances at a key European conference and volume of publications on PC development. The leading country (by raw score) is then considered as the reference point against which all other countries are measured. Different weightings are applied to resources (75%) and vitality (25%). From this, an overall ranking is constructed.

Results. The U.K. achieved the highest level of development (86% of the maximum possible score), followed by Belgium and overall The Netherlands (81%), and Sweden (80%). In the resources domain, Luxembourg, the U.K., and Belgium were leading. The top countries in vitality were Germany and the U.K. In comparison to 2007, The Netherlands, Malta, and Portugal showed the biggest improvements, whereas the positions of Spain, France, and Greece deteriorated.

Conclusion. The ranking method permitted a comparison of palliative care development between countries and shows changes over time. Recommendations for improving the ranking include improvements to the methodology and greater explanation of the levels and changes it reveals.   *J Pain Symptom Manage 2016;52:370−377. © 2016 Universidad Navarra. Published by Elsevier Inc. on behalf of American Academy of Hospice and Palliative Medicine. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/)*

Key Words
Ranking, Europe, palliative care, development

Introduction

Palliative care (PC) attracts growing interest from policy makers and governments and has been endorsed in a 2014 resolution of the World Health Assembly, which calls for its integration into health systems and services globally.[1] One way of measuring the development of PC internationally is through ranking systems that use common measures to facilitate comparisons between countries and over time. In PC, as in public policy in general, rankings are acknowledged as a useful method for describing complex phenomena and their relationships to each other.[2,3] Intended to be easily comprehensible, they

assist in agenda setting, advocacy, encouraging aware-ness, and in joining forces across borders.[4] Rankings also can have weaknesses, in reliability and compara-bility, and these can be exacerbated in the interna-tional context. There are also debates about their value conceptually, culturally, politically, and morally.[5–11] Taking some of these issues into account, the most comprehensive ranking studies in PC devel-opment have been critically reviewed in an explora-tion of the practical difficulties and the theoretical and methodological challenges.[12]

Published in 2010 and 2015, the Economist Intelli-gence Unit's Quality of Death Index has attracted significant interest.[13] In 2010, the Index covered 40 countries and was scored on 24 indicators in four cat-egories, each with a separate weighting, as follows: 1) basic end-of-life health care environment (20%), 2) availability of end-of-life care (25%), 3) cost of end-of-life care (15%), 4) quality of end-of-life (40%). The revised and expanded 2015 Index evaluates 80 countries using 20 quantitative and qualitative indica-tors across five categories: the palliative and health care environment (20%), human resources (20%), the affordability of care (20%), the quality of care (30%), and level of community engagement (10%). In addition to these studies, a world map of PC has been published for 2006 and 2012, in which all coun-tries of the world are categorized into four levels of development (in 2006) and six levels (in 2012). This index formed the basis of classification for the Global Atlas on Palliative Care at the End of Life, published in 2014, and was used to inform the selection of coun-tries for the 2015 Quality of Death Index. The world map classifications also have been cross-referenced in atlases of PC produced for the World Health Orga-nization (WHO) European Region (2007, 2012) and for Latin America (2012).[14–17] A ranking for PC devel-opment in the European Union (EU) was originally requested by the European Parliament in 2008 and was presented in a Technical Report.[17] In addition, a detailed analysis of coverage of PC services in relation to population-based need has been presented for the 53 countries of WHO Europe.[18] None of these ap-proaches is without its problems. In this article, we seek to verify a ranking methodology for international PC development by combining two distinct sets of in-dicators and applying a separate weighting to each set across all countries in the same way.[17]

Methods

Countries

Atlases of PC provision and activity in the countries of the WHO European Region for 2007 and 2013 were used to extract data for the member countries of the EU: 27 in 2007 and 28 in 2013.[18,19]

Framework and Working Definition of PC Development

The ranking system has three components. First, in-dicators of PC resources are constructed based on three types of services: inpatient PC units and inpa-tient hospices (IPCU), hospital support teams (HST), and home care teams (HCT). Resource indica-tors are assessed per million of population for each country.

Second, vitality is defined as the existence of a measurable critical mass of activists and professionals participating in specific PC activities and promoting key objectives. Indirectly, we thought that such critical mass is the key influence to increase PC development in the future. Then in this context and for this work, vitality would be a way to estimate potential palliative care development. Vitality is therefore measured with reference to the existence of a national associa-tion for PC, a directory of palliative services, physician accreditation in palliative medicine, numbers of those per 100,000 population of the country attending the annual Congresses of the European Association for Palliative Care, and amount of references of research publications on PC development. Each of these indica-tors was available from the two European Atlases of PC.

Third, PC development is understood as the com-bination of resources and vitality. In each of these two domains, the leading country by raw score was considered as the index reference, and all countries were then ranked against it. There were some prob-lems of missing data between the two atlases. The resource domain in 2013 excluded two indicators used in 2007: the ratio of PC beds and the ratio of PC physicians per 100,000 inhabitants. Likewise, the vitality domain for 2013 excluded from the analysis the number of pediatric PC units per 100,000 inhabitants.

Sources of Information

The published atlases of PC in Europe comprise a pan-European cross-sectional survey of 53 countries that make up the WHO European Region.[18,20] The methods used in generating the atlases have been described elsewhere.[18,20] Data on attendance at con-gresses of the European Association for Palliative Care, by country, were obtained from the head office of the organization.[21] Total population sizes to build the indicators were extracted from the World Data Bank.[22]

Calculation of Points and Rank Order

Data for each of the measures were assembled, cleaned, and calculated by the first author. In the two cases of missing data (resource domain, Germany

and The Netherlands), the points were calculated with an average: the existing points for each country were summed and then divided by the equivalent number of indicators. This largely eliminated the risk of error and was preferable to giving no points for a given resource. Each country is presented in an index of the individual indicators for resources and vitality. This is then combined in an overall ranking of PC development.

The calculation in the resource domain was obtained as a ratio per 1 million population. Points were assigned to the relative position of the country with respect to the other 27 or 28 countries (in 2007, 2013 respectively). The maximum points were 27 in 2007 and 28 in 2013, reflecting highest development, and the minimum was one point, reflecting lowest development. The resources index was aggregated through computing all three indicators (IPCU, HST, HCT), resulting in a maximum of 81 in 2007 (3 × 27) and 84 in 2013 (3 × 28) points. Missing data on HST were reported for The Netherlands and Germany in 2013. The result was a resource index for PC in the EU (Table 1).

For vitality, two indicators (national association for PC, directory of PC) were given zero for nonexistence or one point for existence. Involvement in EAPC congresses and generation of scientific literature were divided in three different ranges of points, and a score of zero was given for nonexistence, one for existence and two for highest development of the indicator, the third tercile. For physician certification, two points were assigned for existence, one point for a preparation process under way, and zero points for neither certification nor process. Across the five indicators, a maximum of eight points could be achieved for the "vitality" score. This resulted in a vitality index for PC in the EU (Table 2).

The ranking of PC development overall was calculated from the indices of resources and vitality. Weighting of the two was applied following the determination that resources (75%) are a more significant measure of development than vitality (25%). Then, a rating of 100% points was assigned, where 100% reflects the highest level of development of an EU country from a combined resources and vitality score. The results are presented in quartiles as the ranking of PC development in the EU 2007, 2013 (Table 3). From an ordinal ranking method (i.e., 1-2-3-4) used in 2007, in which each value received a distinct ordinal number, including those with equal scores, the approach was modified for 2013. Instead, a standard competition ranking methodology was used, in which equal values receive the same ranking number and leave a gap in the ranking (i.e., 1-2-2-4).[23]

Results

Resources and Vitality

There were differences between countries in these two domains and over time. Comparing the 2013 resources results with 2007, two of the three leading countries changed, with only the U.K. remaining in the top three. Looking at the top 10 countries for resources in 2013, Denmark and Germany moved in, whereas Spain and France moved out. Only one Eastern European country (Poland) and one from Southern Europe (Spain) are found in the top 10 countries across the two time periods (Table 1). An increase of services per head of population can be seen in almost all countries.

For vitality, the highest countries in 2007 and 2013 were Germany and the U.K. (eight points). The lowest ranking countries were Bulgaria, Estonia, and Lithuania. More than half of the countries (n = 15) have a maximum score for physician accreditation. Estonia and Malta were the only countries without a national association. The participation of countries at EAPC congresses was equally divided between no involvement and maximum involvement. Most of the countries have a PC directory (n = 17), and some (n = 11) have the highest level of existence of valid publications. Over the years, no rearrangement of the top countries for vitality occurred. Estonia remained at the bottom of the index. Exceptional countries with significant vitality improvement were Hungary and Sweden.

Contrasting results, scoring low in resources but high in the vitality domain, were identified for Romania, the Czech Republic, and Portugal, with the reverse occurring for Luxembourg, Bulgaria, and Lithuania.

Overall Ranking for PC Development in the EU

The U.K. remained at the head of the ranking in 2013, with a score of 86%. Also in the first quartile of development for 2013, in a range 81%−76%, were Belgium, The Netherlands, Sweden, Ireland, Austria, and Germany, all but one from Western Europe (Poland having fallen from eighth to tenth place). For 2013, Denmark and Luxembourg joined the top 10, whereas Spain and France left. In the lowest quartile, in a range of 24%−21% of development, were Greece and Croatia.

Discussion

This study is the first to offer an analysis of PC development across the countries of the EU in two time periods (2007, 2013) based on measures of resources and vitality. The leading country in the ranking across

Table 1
Ranking of Specific Resources of Palliative Care (PC) in the European Union (EU) in 2007 and 2013

Country	Inpatient PC Units[a]/1 Million Inhabitants[b,c]				Hospital Support Teams[a]/1 Million Inhabitants				Home Care Teams[a]/1 Million Inhabitants				Total Points = Resource Index		Resources Ranking	
	Ratio 2007	Ratio 2013	Points 2007	Points 2013	Ratio 2007	Ratio 2013	Points 2007	Points 2013	Ratio 2007	Ratio 2013	Points 2007	Points 2013	2007	2013	2007	2013
Luxembourg	2.0	9.4	18	27	2.0	5.7	22	24	4.0	5.7	25	21	65	72	5	1
United Kingdom	3.7	3.5	26	20	5.1	5.7	25	25	5.9	6.1	27	23	78	68	1	2
Belgium	2.8	4.6	22	24	7.4	10.4	28	28	1.4	2.5	16	14	66	66	4	3
Netherlands	5.4	12.7	28	28	3.1	ND[d]	24	22[e]	0.0	2.6	1	16	53	66	9	3
Austria	3.1	4.4	24	23	1.2	3.4	19	20	2.1	5.8	19	22	62	65	6	5
Sweden	5.0	4.0	27	22	1.1	1.4	18	16	5.6	11.2	26	27	71	65	2	5
Ireland	2.0	2.0	18	10	5.5	8.5	27	27	3.5	7.6	24	25	69	62	3	7
Poland	3.4	3.8	25	21	0.1	0.2	8	12	6.1	8.4	28	26	61	59	7	8
Denmark	1.3	5.0	13	25	1.1	2.3	18	19	0.9	2.3	13	13	44	57	15	9
Germany	2.8	5.2	23	26	0.7	ND[d]	24	19[e]	0.4	2.2	7	12	54	57	14	9
Malta	0.0	2.4	4	13	2.5	3.6	23	22	0.0	3.6	1	17	28	52	21	11
Spain	2.2	2.4	21	14	0.6	1.7	14	17	3.2	4.0	22	18	57	49	8	12
Bulgaria	2.1	3.0	19	18	0.0	1.2	7	15	3.3	2.6	23	15	49	48	11	13
Lithuania	1.8	3.0	15	19	0.3	0.2	12	9	0.9	4.9	12	19	39	47	18	14
Slovenia	2.0	2.9	18	15	1.0	8.3	16	26	1.0	0.5	14	5	48	46	13	15
Hungary	1.1	1.3	9	6	0.4	0.3	13	13	2.8	7.0	21	24	43	43	16	16
Italy	1.6	2.9	14	16	0.0	0.0	7	7	2.4	5.2	20	20	41	43	17	16
France	1.3	1.6	12	8	5.1	5.3	26	23	1.4	1.8	15	10	53	41	9	18
Latvia	2.2	2.9	20	17	0.0	3.4	7	21	0.0	0.0	1	2	28	40	21	19
Portugal	0.4	2.1	5	12	0.1	1.9	11	18	0.3	1.1	6	8	22	38	25	20
Estonia	0.0	0.0	4	2	0.0	0.0	7	7	0.0	11.3	1	28	12	37	27	21
Finland	1.2	1.8	11	9	1.9	0.2	21	10	1.9	2.2	17	11	49	30	11	22
Czech Republic	1.0	1.6	7	7	0.1	0.2	11	11	0.4	0.4	8	4	26	22	23	23
Cyprus	1.0	0.9	8	5	0.0	0.0	7	7	2.0	1.8	18	9	33	21	20	24
Slovakia	1.1	2.0	10	11	0.0	0.0	7	7	0.0	0.0	1	2	18	20	26	25
Romania	0.4	0.8	6	4	0.1	0.1	9	8	0.5	0.7	9	6	24	18	24	26
Croatia	—[f]	0.0	—	2	—	0.0	—	7	—	0.9	—	7	—	16	—	27
Greece	0.0	0.1	4	3	1.8	0.0	20	7	0.8	0.1	11	3	35	13	19	28

[a]Data for the individual settings/services were taken from the EAPC Taskforce for Development questionnaire in Europe (Fact Questionnaire, Eurobarometer).[18,20]
[b]Figures for the population per million were taken from the World Data Bank (2012).[22]
[c]Points are given for each indicator: 28 points for the countries with the highest ratio of an indicator and 1 point for the lowest one. The ratio of the 28 EU Countries is calculated as follows: equal weight for each indicator. The total is the sum of all points and rate the 28 countries over 84 points. Where an indicator is not available, we estimate its points giving the average of the other indicator.
[d]For Germany, the EAPC Atlas, the data of HST were unavailable. Following publication of the Atlas, the number was revealed as 90 HST. That means 6 services less than previous 2005 survey. The 2012 coverage would therefore be 50/410 (12%).
[e]In case of missing data, the ranks were calculated with an average ranking summing up the ranks of Inpatient PC Units/1 Million inhabitants and Home Care Teams/1 Million inhabitants divided by two.
[f]Missing data for 2007 because Croatia joined the EU 2004.

Table 2
Ranking of Vitality of Palliative Care (PC) in the European Union (EU) in 2007 and 2012

Country	Physician Accreditation[a,b]		Existence of National Association[a]		Percentile Group of Total Assistance to PC Congress[c]		Directory of Services[a]		Valid Scientific Information in the Literature[a]		Total Points = Vitality Index[d]		Vitality Ranking	
	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013	2007	2013
Germany	2	2	1	1	2	2	1	1	2	2	8	8	1	1
United Kingdom	2	2	1	1	2	2	1	1	2	2	8	8	1	1
Belgium	0	1	1	1	2	2	0	1	2	2	5	7	7	3
Denmark	1	2	1	1	2	2	0	1	1	1	5	7	7	3
France	2	2	1	1	2	1	1	1	2	2	8	7	1	3
Hungary	0	2	1	1	1	1	0	1	1	2	3	7	15	3
Ireland	2	2	1	1	1	1	1	1	1	2	6	7	5	3
Italy	0	2	1	1	2	1	1	1	2	2	6	7	5	3
Netherlands	0	1	1	1	2	2	0	1	2	2	5	7	7	3
Romania	2	2	1	1	1	1	0	1	1	2	5	7	7	3
Spain	1	1	1	1	2	2	1	1	2	2	7	7	4	3
Sweden	0	1	1	1	2	2	0	1	1	2	4	7	12	3
Austria	0	1	1	1	1	2	1	1	0	1	3	6	15	13
Czech Republic	1	2	1	1	0	1	0	1	1	1	3	6	15	13
Portugal	0	2	1	1	1	2	0	0	1	1	3	6	15	13
Finland	1	2	1	1	1	1	0	0	1	1	4	5	12	16
Latvia	1	2	1	1	0	0	0	1	1	1	3	5	15	16
Poland	2	2	1	1	1	1	0	0	1	1	5	5	7	16
Greece	0	0	1	1	1	1	0	1	1	1	3	4	15	19
Malta	1	2	1	0	0	0	0	0	1	1	3	3	15	20
Slovakia	2	2	0	1	1	0	0	0	1	0	4	3	12	20
Slovenia	0	1	1	1	1	1	0	0	1	0	3	3	15	20
Croatia	—	0	—	1	—	0	—	0	—	1	—	2	—	23
Cyprus	0	0	0	1	0	0	0	0	1	1	1	2	25	23
Luxembourg	0	0	1	1	0	0	0	1	0	0	1	2	25	23
Bulgaria	0	0	1	1	0	0	0	0	1	0	2	1	23	26
Estonia	0	0	0	0	0	0	0	0	1	1	1	1	25	26
Lithuania	0	0	1	1	0	0	0	0	1	0	2	1	23	26

[a]Data for the individual settings/services were taken from the EAPC Taskforce for Development questionnaire in Europe (Fact Questionnaire, Eurobarometer).[18,20]
[b]Centeno et al.[25]
[c]Data from EAPC Head Office.[21]
[d]Points are given for each indicator: 10 points for the countries with the highest ratio of an indicator and 1 point for the lowest one. The ratio of the 28 EU Countries is calculated as follows: equal weight for each indicator. The total is the sum of all points and rate the 28 countries over 10 points.

Table 3
Global Ranking for Palliative Care (PC) Development in the European Union (EU) in 2007 and 2013

Country	Resources Index Max 84	Vitality Index Max 8	Overall Development Index[a] Max 100	Ranking 2007 2007	Ranking 2013 2013
United Kingdom	68	8	86	1	1
Belgium	66	7	81	4	2
Netherlands	66	7	81	10	2
Sweden	65	7	80	3	4
Ireland	62	7	77	2	5
Austria	65	6	77	9	5
Germany	57	8	76	5	7
Denmark	57	7	73	13	8
Luxembourg	72	2	71	11	9
Poland	59	5	68	8	10
Spain	49	7	66	5	11
Italy	43	7	60	13	12
Hungary	43	7	60	17	12
France	41	7	58	7	14
Malta	52	3	56	21	15
Portugal	38	6	53	25	16
Latvia	40	5	51	21	17
Slovenia	46	3	50	15	18
Bulgaria	48	1	46	16	19
Lithuania	47	1	45	18	20
Finland	30	5	42	12	21
Czech Republic	22	6	38	24	22
Romania	18	7	38	20	22
Estonia	37	1	36	27	24
Slovakia	20	3	27	26	25
Cyprus	21	2	25	23	26
Greece	13	4	24	19	27
Croatia	16	2	21	—	28

[a]Global development index is 75% resources + 25% vitality. The formula is as follows: [(Vitality index/maximum of vitality) × 75) + ((Resource Index/maximum of resources) × 25)].

the period was the U.K., and in 2013, nine of the top 10 countries were from Western Europe. Significant improvements were achieved by Malta, Portugal, and The Netherlands. Some countries had mixed outcomes over the period. For example, in Finland, the ratios of IPCU and HCT improved but a decrease occurred in the number of HST.

Within the weightings, significant emphasis was given to resources and within that, particular importance was ascribed to three types of services. This is undoubtedly a key determinant of the reported results. More deeply rooted determinants might lie in the economic situation of each country; the per capita spending on health care or specific population characteristics.

The 2015 Quality of Death Index, assesses the "availability, affordability and quality of palliative care available," with 20 indicators in five categories: "Palliative and healthcare environment" (20%), "Human resources" (20%), "Affordability of care" (20%), "Quality of care" (30%), and "Community engagement" (10%).[13] Table 4 compares the relative position of the 19 European countries that are in both classifications. Even with very different methods and sources of data, the coincidences of the two ranking are remarkable: the top and bottom countries are almost the same, and differences are less than ±3 relative

positions in all but four of the 19 countries included. We only used eight indicators in two categories: "palliative care resources" (75%) and "vitality of the palliative care movement" (25%). Our more simple ranking method is therefore as sensitive as more complex ones to evaluate PC development in the EU. The inference is that the changes between 2007 and 2012 presented in our study are significant. Because of these points, the methodology has to evolve in a way that adds particular sophistication to what is an incredibly complex environment.

A different approach could be developed using the World Health Organization's foundation measures: education, policy, drug availability, and implementation.[24] In this model, resources and vitality relate closely to implementation—so this would make a more complete set of measures. Likewise, there is scope for the inclusion in any future analysis of additional variables, for instance, volunteer teams or day-care provision.[18] In same way, in the future, the evaluation of PC has to consider not only indicators for specialist PC services but also for "general PC carried out by primary health teams."

Importantly, some indicators have the potential to grow (number of services), whereas others will remain static as saturation is reached (physician accreditation, existence of a national association). On this basis,

Table 4

Comparison of the 2013 Global Ranking for Palliative Care Development and the 2015 Quality of Death Index,[13] for Some European Countries

Country[a]	Position in 2013 PC Development Ranking (28 Countries)[b]	Position in 2015 Quality of Death Index (80 Countries)[c]	Relative Position in 2013 PC Development Ranking	Relative Position in 2015 Quality of Death Index	Difference in Relative Position
United Kingdom	1	1	1	1	0
Belgium	2	5	2	3	−1
Netherlands	2	8	3	5	−2
Sweden	4	16	4	7	−3
Ireland	5	4	5	2	3
Austria	5	17	6	8	−2
Germany	7	7	7	4	3
Denmark	8	19	8	9	−1
Poland[d]	10	26	9	14	−5
Spain	11	23	10	12	−2
Italy	12	21	11	11	0
Hungary[d]	12	41	12	17	−5
France[d]	14	10	13	6	7
Portugal	16	24	14	13	1
Lithuania	20	30	15	15	0
Finland[d]	21	20	16	10	6
Czech Republic	22	33	17	16	1
Romania	22	64	18	19	−1
Greece	27	56	19	18	1

[a]Only are reported in the table European countries included in both classifications.
[b]The 2013 Palliative Care Development Ranking, presented in this article, assess the "palliative care development," with eight indicators in two categories: "palliative care resources" (75%) and "vitality of the palliative care movement" (25%) (see definitions and framework in the text).
[c]The 2015 Quality of Death Index assess the "availability, affordability and quality of palliative care available" with 20 indicators in five categories: "Palliative and healthcare environment" (20%), "Human resources" (20%), "Affordability of care" (20%), "Quality of care" (30%).
[d]Countries where differences are bigger than ±3/19 relative positions.

alterations in the weightings could be considered. Further work is also needed to ensure the quality of individual indicators, for example, directories, whether they are updated, or the measures for published literature. Triangulation with additional data sources beyond the atlases also may be helpful, especially in relation to completeness and quality of the available data. In particular, the missing HST data from Germany could have been provided by the use of external sources (such as the German Palliative Medicine Society).

Critics point out that such rankings obscure complexity or the varying contexts of country-specific health systems, resources, geography, demography, level of development, and ethnic variation. So far, research is lacking about how these aspects modulate PC development. At this stage, global indicators of development are not sensitive enough to detect these more subtle influences.

Although intended as a stimulus to development, and as a source of motivation, the "naming and shaming" approach can result in demotivation or embarrassment.[24] Responding to this, future emphasis could be directed to the countries with high resources and low vitality and vice versa—thereby placing more emphasis on the results of the two indices and less on the overall ranking.

If stakeholders want to promote the ongoing development of PC, then the rankings should support the analysis of factors behind the performance. In addition, factors that drive new legislation, that shape the management of resources—population health characteristics, the stability of the financial situation, or the role of a border-free Europe, where health resources can be accessed from neighboring countries—could all be considered.

Future research should be directed toward the refinement of the included indicators and development of new indicators capturing the development of PC. Shifts in weighting should be considered.

Conclusion

This article places each EU country in a ranking of PC development and shows changes over time. There is now room for further improvement of the ranking methodology and also for more attention to explaining the trends and changes it reveals.

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References

1. The World Health Organization (WHO). Sixty-seventh World Health Assembly (WHA). 2014 2015. Available at: http://www.who.int/mediacentre/events/2014/wha67/en/. Accessed May 1, 2016.

2. Clark D, Centeno C. Palliative care in Europe: an emerging approach to comparative analysis. Clin Med 2006;6:197−201.

3. Pastrana T, Torres-Vigil I, De Lima L. Palliative care development in Latin America: an analysis using macro indicators. Palliat Med 2014;28:1231−1238.

4. Oliver TR. Population health rankings as policy indicators and performance measures. Prev Chronic Dis 2010;7:A101.

5. Hofer TP, Hayward RA. Identifying poor-quality hospitals: can hospital mortality rates detect quality problems for medical diagnoses? Med Care 1996;34:737−753.

6. Hofer TP, Hayward RA, Greenfield S, et al. The unreliability of individual physician report cards for assessing the costs and quality of care of a chronic disease. JAMA 1999;281:2098−2105.

7. Jacobs R, Goddard M, Smith PC. How robust are hospital ranks based on composite performance measures? Med Care 2005;43:1177−1184.

8. Krieger N, Chen JT, Waterman PD, et al. Choosing area based socioeconomic measures to monitor social inequalities in low birth weight and childhood lead poisoning: The Public Health Disparities Geocoding Project (US). J Epidemiol Community Health 2003;57:186−199.

9. Krieger N, Chen JT, Waterman PD, et al. Geocoding and monitoring of US socioeconomic inequalities in mortality and cancer incidence: does the choice of area-based measure and geographic level matter?: the Public Health Disparities Geocoding Project. Am J Epidemiol 2002;156:471−482.

10. Marshall EC, Sanderson C, Spiegelhalter DJ, McKee M. Reliability of league tables of in vitro fertilisation clinics: retrospective analysis of live birth rates. BMJ 1998;316:1701−1705.

11. O'Brien SM, Peterson ED. Identifying high-quality hospitals: consult the ratings or flip a coin? Arch Intern Med 2007;167:1342−1344.

12. Loucka M, Payne S, Brearley S. How to measure the international development of palliative care? a critique and discussion of current approaches. J Pain Symptom Manage 2013;47:154−165.

13. The Economist Intelligence Unit. The 2015 Quality of Death Index 2015. Available at: http://www.economistinsights.com/healthcare/analysis/quality-death-index-2015. Accessed May 1, 2016.

14. Wright M, Wood J, Lynch T, Clark D. Mapping levels of palliative care development: a global view. J Pain Symptom Manage 2008;35:469−485.

15. Lynch T, Connor S, Clark D. Mapping levels of palliative care development: a global update. J Pain Symptom Manage 2013;45:1094−1106.

16. Murray S, Line D, Morris A, Tam G. The quality of death. Ranking end-of-life care across the world. London: Economist Intelligence Unit, 2010:1−36.

17. Martin-Moreno JM, Harris M, Gorgojo L. Palliative care in the European Union 2008. Brussels, Belgium: European Parliament. Policy Department, Economic and Scientific Policy, 2008.

18. Centeno C, Lynch T, Donea O, Rocafort J, Clark D. EAPC atlas of palliative care in Europe 2013. Available at: http://dspace.unav.es/dspace/handle/10171/29291. Accessed May 1, 2016.

19. European Union. Countries. 2016. Available at: http://europa.eu/about-eu/countries/index_en.htm. Accessed May 1, 2016.

20. Centeno C, Clark D, Lynch T, et al. EAPC atlas of palliative care in Europe 2007. Available at: http://www.bag.admin.ch/themen/gesundheitspolitik/13764/14078/index.html?lang=de. Accessed May 1, 2016.

21. European Association for Palliative Care (EAPC). Main EAPC Research Congresses - participants breakdown per country 2015. Available at: http://www.eapcnet.eu/Corporate/Events/Participantsbreakdown/MainCongresses.aspx. Accessed May 1, 2016.

22. The World Data Bank. World Development Indicators-Population, Total 2015. Available at: http://databank.worldbank.org/data/views/reports/tableview.aspx?isshared=true. Accessed May 1, 2016.

23. MathLab Central 2015. Available at: http://www.mathworks.com/matlabcentral/fileexchange/19496-rankings/content/StandardCompetitionRankings.m. Accessed May 1, 2016.

24. Stjernswärd J, Foley KM, Ferris FD. The public health strategy for palliative care. J Pain Symptom Manage 2007;33:486−493.

25. Centeno C, Bolognesi D, Biasco G. Comparative analysis of specialization in palliative medicine processes within the World Health Organization European Region. J Pain Symptom Manage 2015;49:861−870.