Development and Validation of a questionnaire to describe behaviours and attitudes of physicians towards their own process of falling ill.

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Abstract

Background: Physicians have not learned their role as patients. Medical associations focused mainly on mental health programs for doctors in different countries. Nevertheless, the anomalous behaviours of ill doctors exist independently of their health problem. We described the development and validation of a questionnaire to describe Behaviours and Attitudes of Doctors towards their Own Illness (BADOI).

Methods: Development of the questionnaire and appearance and content validation (ACV) by experts' debriefings; construct validation by exploratory (EFA) and confirmatory factor analysis (CFA); reliability by Cronbach's alpha index (CAI) and feasibility by completion time (CT), accessibility to questionnaire platform and % of not answer items.

Results: A Questionnaire with 56 items was developed with 3 sections: 1) socio-demographic, professional and work-related data. 2) Activities for self-care and work impact (sick leaves and presenteeism) and physicians' healthcare pathways (Self-management and use of healthcare services). 3) Doctors of ill doctors and the role of medical associations. The validation sample size was of 4308 physicians' answers. The factorial model presented 5 factors explaining 78.08% variance, a high value. Factor 1 explained 26.75% of the model describing the relationship between illness and work; Factor 2 explained 16.68%, with items regarding the negative impact of mental issues, toxic habits and the use of healthcare services; Factor 3 explained 15.06%, with items considering presenteeism and sick leaves; Factor 4 explained 9.95% regarding the handling of an ill colleague and medical associations. Finally, Factor 5 explained 9.64%, with items describing healthcare given to ill physicians and the revalidation of medical profession.

Discussion: The factors grouped together items relating to self-care, impact on work and physicians' healthcare pathways (F1-F2-F3) and the role of doctors of ill doctors and of the professional associations (F4-F5), being consistent with the 2 main perspectives: personal experience and caring for ill colleagues.

Conclusion: A reliable Multidimensional Questionnaire on the process of physicians becoming ill has been validated in a large sample of registered doctors. It will help to identify and quantify physicians' healthcare pathways allowing healthcare managers to set evidence-based interventions and formulate policies and ethical recommendations regarding the management of sick doctors.

Background

The culture of self-sacrifice has been promoted in the medical profession and health organizations prioritising the needs of patients above all else, even above doctors' own health needs (1). Moreover, when doctors fall ill, they become atypical patients(2) and have difficulties in taking on the role of patient (3). Consequently, behaviours of self-diagnosis (4), self-treatment (5) and the use of alternative healthcare pathways (6) are frequent. Doctors who treat ill colleagues very often do not act as they would with a standard patient and may feel pressured, tense and uncertain(7). Therefore, the care received by ill doctors may be of poorer quality than standard. In the meanwhile, working while ill, physicians might pose risks to their patients (8),(9).

It is difficult to find epidemiological information regarding ill doctors in Spain and other European countries, except for those being treated under Mental Health Programs as the Spanish Integrated Care Programme for Ill Doctors (PAIME) (10), which is devoted to mental disorders and addiction. Nonetheless, the impact of doctors' anomalous behaviour affects the way they cope with any illness.

The subject is never approached during the years of undergraduate study, and once they are practising, doctors will have internalised the notion that patients are others(11). A conflict then emerges between the roles of professional and patient. This conflict negatively impacts the process of providing care and professional competence (12) and leads to high rates of presenteeism (13).

The World Medical Association expressed its concern in this respect and issued a declaration to this end (14). The declaration incorporated a key reference to doctors' own health into its Physician's Pledge: 'I will attend to my own health, well-being, and abilities in order to provide care of the highest standard'(15).

We started a project: 'Getting Sick is Human: When the Doctor is the Patient' to provide an understanding of the process of doctors falling ill through a qualitative approach based on semi-structured interviews with ill doctors and focus groups, together with a descriptive approach involving a self-reported survey for the purpose of describing the perceptions of doctors facing their own illness and to identify improvements for the provision of a better healthcare quality in the health system throughout every stage of the medical profession, from medical students to retired doctors.

The present study aims to present the development and validation of the Behaviours and Attitudes of Doctors facing their Own Illness (BADOI) questionnaire.

Methods

Questionnaire development (Fig. 1):

A literature search was conducted on the process of doctors falling ill. No MeSH term were identified that could suitably reflect the concept of 'ill/sick doctor/physician'. The information search strategy, including documents published by medical associations, was structured according to the dimensions identified for qualitative research. At the same time, semi-structured interviews were conducted with ill doctors at three professional levels: junior doctors, practising doctors and retired doctors. Interviews were conducted with a total of 26 ill doctors. Focus groups were developed comprising doctors specialising in occupational health, clinical and educational supervisors, and representatives of Spanish provincial medical associations.

An initial questionnaire was designed with 26 items sourced from the literature and the map of conceptual codes which had been defined for the qualitative analysis of interviews and focus groups. The questionnaire was piloted between 2014 and 2016 with debriefing by experts. Modifications were incorporated from the debriefing, together with questions derived from the focus groups and interviews. At the suggestion of experts, questions from the 2017 Spanish National Health Survey (ENSE17) (16) were incorporated in order to allow comparison of certain lifestyle habits with the population with the same level of education and age. Questions on certain ethics-related aspects taken from the Ethics in the Coordination Between Levels of Care (ERNA) survey (17) were also incorporated.

The final questionnaire items were grouped into the following three sections: 1) content related to socio-demographic aspects, speciality, employment status, public/private/combined practice and professional satisfaction; 2) content related to health-related aspects (chronic illness, flu vaccination, smoking, alcohol use, relationship with general practitioner) and impact on work (sick leave, presenteeism, time in sick leave) and related to falling ill (self-diagnosis, self-treatment, alternative pathways to diagnosis and treatment, patient care and confidentiality). 3) Content related to being consulted by ill colleagues, being doctor of a doctor, medical associations, ethical considerations regarding periodic revalidation and aspects that could be improved with regard to provision of healthcare to ill doctors (Appendix 1: Final questionnaire).

Target population:

The target population was the 270,000 Spanish registered physicians. Random sampling was conducted with a (1- α):99% confidence interval, 3% precision and sample proportion of $p = 0.5$ that would maximise sample size, with an expected attrition rate of 50%. The total sample consisted of 3,662 physicians. The questionnaire was designed with a self-report format to be filled online in the Organisation of Spanish Medical Associations (OMC) website <http://www.cgcom.es/>. All physicians registered in any of the 50 Provincial Medical Associations in Spain had accessed to the online questionnaire.

The questionnaire was available from June 2017 until June 2018. The study was approved by the Research Ethical Committee of Aragon in 2016.

Questionnaire validation:

The validation process was divided into two stages(18): 1) assessment of face validity, content validity and feasibility and 2) assessment of construct validity and reliability.

1) Process for assessing face validity, content validity and feasibility:

The validation process consisted of assessing face validity and content validity through three debriefings with experts, in medical ethics and, experts from PAIME and Fundació Galatea (a foundation created to protect the health and well-being of all health professionals) (19) and the research team.

In terms of questionnaire feasibility, the evaluation took into consideration: 1) Percentage of unanswered questions, 2) the access to the questionnaire platform, available only to Spanish registered physicians.

2) Process for assessing construct validity and reliability (20):

Construct validity was assessed by exploratory factor analysis (EFA). Prior to this, the suitability of the factor analysis was evaluated by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Adequacy was also evaluated through a correlation matrix by Bartlett's Test of Sphericity. In our case, the p-value associated with Bartlett's test was < 0.001 , confirming the use of this technique. Then a confirmatory factor analysis (CFA) was performed to corroborate the dimensions of the questionnaire and to analyse the distribution of the items within each dimension. The following goodness-of-fit statistics were obtained: 1) Normed fit index (NFI), which took values between 0 and 1. NFI values closer to 1 indicated a better fit. 2) The root mean square error of approximation (RMSEA) index which was a subjective magnitude. A value less than 0.10 was usually considered an indicator of good model fit. The comparative fit index (CFI) measures model fitted as well. In order to interpret the factors resulting from the CFA, the items whose correlations with the factors were highest in absolute value were identified first, given that they could be directly or indirectly related.

The reliability was measured through the internal consistency of the questionnaire by correlation coefficients and Cronbach's alpha.

The development and validation stages are summarised in Fig. 1.

Results

The final questionnaire consists of three sections with 55 closed questions and one open-ended question. (Appendix 1 contains the final questionnaire in Spanish and English).

Content and face validation and feasibility were conducted through the debriefing sessions held with the medical associations which led to the incorporation of questions related to the role of these associations in the process of doctors falling ill and on the periodic revalidation. The debriefing sessions held with experts from PAIME led to questions on the availability of services to manage ill doctors. Furthermore, in order to facilitate comparison with general population of same age and level of education, the experts suggested the incorporation of 11 questions from the ESNE17.

The median completion time recorded by the online platform was 10–12 minutes, which was quite an optimal period. With regard to the form, method and time required to classify the scale scores, the survey was very easy to fill as the items were categorically arranged and many of them were also rated by a Likert-like scale. Finally, in terms of the consideration of the person who filled the survey, the questions were highly focused in the field of healthcare and

physicians' experiences, and the survey was only available through the websites of medical associations, so there was a need to be a registered doctor to access and answer.

The questionnaire was completed by a total of 4,308 physicians, of whom 1,858 were men (43.13%) and 2,450 women (56.87%). Considering professional stages, more female junior doctors (73.06%) than male (26.94%) took part. With regard to medical specialists, female representation was also higher (59.37%) than men (40.63%). Finally, the retired doctors group comprised a majority of men (73.08%). The mean age of the male participants (54.78 ± 11.87 years) was higher than that of the female participants (45.95 ± 11.76) in all professional stages, with statistically significance among medical specialists and retired doctors (Table-1).

Table 1: Distribution by age, sex and professional category of sample					
Professional category	Sex	Professional	Mean	SD*	P Value
Junior doctors	Male	97	31.67	9.91	
	Female	263	28.90	5.95	p > 0.05
Medical Specialists	Male	1,408	52.93	9.24	
	Female	2,057	46.84	9.69	P < 0.05
Retired doctors	Male	353	68.48	5.09	
	Female	130	66.43	5.58	P < 0.05
Total of doctors	Male	1,857	54.78	11.87	
	Female	2,449	45.95	11.76	P < 0.05
	Total	4,306	49.76	12.59	
*SD: Standard Deviation					

The fact that our initial estimated sample was 3,662 medical practitioners and the current sample is slightly bigger reinforced the feasibility of the questionnaire. Only three questions were not answer by all participants (Table-2).

Tabla-2: Distribution and percentage of unanswered items in BADOI					
Items		Answers	Participants	%Answers	% No Answered
p21	21. What was the main reason that any of your health problems was the result of or worsened because of your professional activity? 1. The level of responsibility in your profession. 2. Overwork and working hours. 3. The impact of a medical error or errors experienced with your patients. 4. Another reason (give details in the following question)	1,952.00	4,308.00	45.31	54.69
p25	25. The main reason you went to work while you were ill was...1. Your responsibility to your patients; 2. To not overburden your colleagues; 3. Fear of losing your contract; 4. To keep up your regular income	3,850.00	4,308.00	89.37	10.63
p36	36. Is your GP your spouse/partner, a family member or close friend?	4,186.00	4,308.00	97.17	2.83
The rest of items were answered by 100% of the sample size					

With regard to the construct validity, EFA was performed to corroborate the questionnaire dimensions and to analyse the distribution of items into the dimensions. The KMO value was 0.8193, which was good and justified the use of this multivariating technique. Bartlett's Test of Sphericity obtained a p-value of < 0.001, indicating that the items were related and confirming the use of EFA. For the calculation of CFA, the NFI was used, with an NFI value of 0.721 indicating good model fit. The RMSEA index score below 0.109 indicated that model fit was within acceptable limits. The CFI index score of 0.859 indicated good model fit.

Five dimensions were selected as a solution to the CFA, fulfilling the Kaiser rule, selecting all factors whose eigenvalues were greater than one. The factor model with the five factors explained 78.08% of model variance, a high value. Table-3 shows the variance that explains each of the factors, and their aggregate value.

Table 3
Variance for every factors in the factor analysis and Crombach's Alpha Index

Factor	Actual Variance	Difference	% Variance of factors	% Total Variance	CAI
Factor 1	3.09456	1.16497	26.75	26.75	0.8045
Factor 2	1.92959	0.18723	16.68	43.42	0.6764
Factor 3	1.74236	0.59075	15.06	58.48	0.5722
Factor 4	1.15161	0.03609	9.95	68.44	0.6790
Factor 5	1.11552	0.28656	9.64	78.08	0.6924
*C.A.I.: Crombach's Alpha Index					

Table-4 provided the distribution of items within each factor. Factor 1 explained 26.75% of the model. It grouped 3 questions concerning the relationship between illness and work (p18, p20 and p21); Factor 2 explained 16.68% of the model. It was formed by mental health issues, impact of work on health and the weighting of toxic habits (consumption of toxic substances). Factor 3, explaining 15.06%, was made of sick leave and presenteeism; Factor 4, which explained 9.95%, included items related to the handling of an ill colleague and medical associations. Finally, Factor 5, which

explained 9.64% of the model, contained questions related to the healthcare given to ill physicians and the revalidation of medical profession.

Table-4: Distribution of KMO values per item and distribution of items in each factor. [Table exceed a A4 page so we have attached it as a separate excel file]

To conclude, the internal consistency and homogeneity of the instrument was analysed by Crombach's Alpha Index for each dimension from the CFA. The final column of Table-3 shows the values obtained, which are high and close to one for each factor. Each of the factors is consistent in the sense that the items that it comprises are stable in the dimension.

Discussion

A questionnaire with 56 items directed at compiling behaviours and attitudes in the medical profession concerning the process of doctors falling ill was developed and properly assessed the psychometric soundness of the questionnaire throughout appearance, content and construct validity and feasibility with an important sample size of 4,308 answers.

Sex distribution of participants clearly showed the feminisation of the current medical population(23–25). It may have been necessary to incorporate a gender perspective, as it has been explicitly done in other studies on doctors' health (26). We focused on the impact of illness on the medical profession regardless gender issues. So certain variables were not directly taken into consideration, such as responsibility for children(27) and the care of elderly persons(28), compatibility with household chores and the profession(29), which most likely have an impact on health and illness in women and which would influence decisions on the careers of future women doctors (30, 31), particularly in surgical fields (32). Therefore, we considered the gender perspective to be a very important area of research to develop in the immediate future by the research group.

With regard to the construct validity process, factor analysis allowed us to group the questions in factors that connected items with resemblance of the main sections: self-care, illness and health work impact and healthcare pathways which are mainly represented by factors 1, 2 and 3. Then Factors 4 and 5 are more related to the role of doctors who care for ill doctors and the role of medical associations and revalidation of the medical profession. All the factors included questions on the process of physicians' health-illness, but each one provided a nuance to the analysis. Both the factors themselves and the entire set of factors explain a model with statistical significance. With regard to internal validity, Cronbach's alpha provided an excellent result. All of this means that the questionnaire has been properly validated. The research team is assessing the incorporation of the gender perspective in the questionnaire analysis and approaching the limitations found with the questionnaire with new research strategies.

One of the main limitations for contrasting the information of BADOI questionnaire is the lack of previous research studies on the subject in Spain, excepting one regarding health habits by Fundació Galatea (33), and internationally, particularly among Norwegian doctors (8),(2)(13) and Australia (6, 34, 35). There are many more recent studies on mental disorders, addiction, burn-out and suicide in the medical professions(36–39), but less on the impact of any illnesses and basic preventive activities among physicians which may influence patients as well (40, 41). We included some health practices items from Spanish National Health Survey 2017 in order to compare with the Spanish population of the same level of education and group of age.

The main design limitation was the difficulty in conveying the qualitative information from the conceptualisation of main results from focal groups and semi-structured interviews with ill doctors into closed questions without losing relevant information (content validity). Content advice was provided by a very diverse group of experts including professionals from the Fundació Galatea and PAIME, Spanish provincial medical associations and the research group.

The fact that there was not a specific keyword that can better orientate the literature search was also a limitation. For this reason, it should be considered to create a MeSH term such as 'sick doctor' or 'ill doctor' to facilitate identification of references on this important topic on healthcare organizations.

Moreover, the limitations of the instrument cannot be overlooked: a self-report survey accessible on a websites. Self-reported information is limited by the fact that it can rarely be independently verified. However, this factor has a lower weighting in individuals with high levels of education (21). In addition, the fact that it makes use of the Internet may have facilitated participation from younger professionals (22) and the need to be registered physician ensured the suitability of respondents.

Conclusion

A reliable Multidimensional Questionnaire on the process of physicians becoming ill has been validated in a large sample of registered doctors which will help to describe and quantify health behaviours and healthcare pathways of ill physicians, allowing to set evidence-based interventions and formulate policies and ethical recommendations and to involve all the players – medical practitioners and medical associations, occupational health services, governing bodies of health institutions, specialist training units and medical students – in order to guarantee a quality and safe care for the medical profession as a key element of healthcare quality, clinical ethics and professionalism.

List Of Abbreviations

PAIME, Programa de Atención Integral al Médico Enfermo. Spanish Health Program for Mental Health and Addictions among Doctors.

OMC, Organización Médica Colegial. National Organization of Provincial Medical Associations

ENSE17, Encuesta Nacional de Salud de España 2017. Spanish National Health Survey 2017

ERNA, Encuesta de Relaciones entre Niveles Asistenciales. Survey on the Relationship between levels of healthcare.

EFA, Exploratory Factor Analysis

CFA, Confirmatory Factor Analysis

CAI, Crombach Alpha Index

Declarations

Ethics approval and consent to participate:

This study was approved by the Clinical Research Ethics Committee of Aragon (CEICA) on 5 October 2016. Registration number CI P16/0236.

All participants in the survey agreed to participate by indicating this at the beginning of the online survey.

A Statement of consent to publish from the patient is Not Applicable.

Consent for publication:

Not Applicable.

Availability of data and materials:

All data and materials are available upon request to researchers. Nevertheless, questionnaire database is included as a supplementary material with the manuscript submission.

Authors' contributions:

All the authors are members of the Bioethics Research Group of Aragon that is leading the project Getting Sick is Human: When the Doctor is the Patient.

This project involves the writing of four doctoral theses related to the stages of the medical practitioner career: medical student, junior doctor, practising doctor and retired doctor.

Dr Bárbara Marco-Gómez is conducting the research focusing on practising doctors.

Dr Rogelio Altisent is the lead researcher on the project and coordinator of all projects undertaken by the group.

Dr Candela Pérez-Álvarez is conducting the research focusing on junior doctors.

Dr Teresa Martínez-Boyeró is conducting the research focusing on retired doctors.

Dr Alba Gallego-Royo is conducting the research focusing on medical students.

Dr María Teresa Delgado-Marroquín and Dr María-Pilar Astier-Peña are joint advisors of the doctoral theses derived from this study in conjunction with Dr Altisent.

All the authors actively participated in every stage of the research: data collection, statistical analysis, discussion of results and writing of the present manuscript.

Competing interests:

On behalf of all the authors, Dr María-Pilar Astier-Peña states that there are no conflicts of interest in relation to the research presented involving any of the authors.

Dr María Pilar Astier-Peña, corresponding author on behalf of the other signees guarantees the accuracy, transparency and honesty of all the data and information contained in the study; that no relevant information has been omitted; and that any discrepancies between authors have been properly resolved and described.

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Authors' Information:

All authors belong to Grupo de Investigación en Bioética de Aragón-IISS (Bioethics Research Group of Aragon) and to the Chair of Professionalism and Clinical Ethics, University of Zaragoza. Professionalism and Clinical Ethics University of Zaragoza, Spain.

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Figures

Figure 1

Development and validation process of the “Behaviours and Attitudes of Doctors Towards Their Own Illness” (BADOI) questionnaire.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Appendix1questionnaire.doc](#)
- [respuestamedicocomopaciente29062018revisadaoct2019.xlsx](#)