

Physicians' perception of the importance of ethical and deontological issues in a major Italian Province: pilot questionnaire and its validation

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Summary. *Background and aim:* This study aims at validating a questionnaire on physicians' knowledge and perception of deontological and ethical rules that guide the medical profession, in a major Italian Province. *Methods:* We designed an on-line survey questionnaire. Participants (N=200) were asked to fill in information regarding their demographic features and knowledge of the deontological code. *Results:* Concerning the preliminary data, the median total score on knowledge of the deontological code was 0.50. A significant difference in the total score was observed among education groups. Specifically, the median total score among subjects with a specialist qualification was significantly lower than among those with only a medical degree. *Conclusions:* The tested instrument and methodology appear to be efficacious and reliable. Our preliminary data indicate that knowledge of the rules concerning medical deontology and the related principles of medical ethics seems to be very limited. Therefore, the authors plan to implement a second phase of the study, which will consist of the questionnaire' distribution to a broader and more representative sample. (www.actabiomedica.it)

Key words: code of medical deontology; medical ethics; ethical principles; physicians' knowledge; pilot questionnaire

Background

In their clinical practice, physicians are increasingly called upon to deal with complex situations that may be a source of ethical dilemmas and deontological problems. This requires knowledge of the ethical principles included in the Code of Medical Deontology (here in after CMD).

The Italian CMD contains a series of rules of conduct which are inspired by fundamental ethical principles shared by the medical community. Physicians enrolled in the professional registry are obliged to observe these rules in their professional practice (1,

2). Whereas in the Anglo-Saxon world the first CMD dates back to the beginning of XIX century, in Italy the first national edition of the CMD dates back to 1924. Subsequently, various revisions were undertaken, including that of 1935-37 (fascist version) and those of republican history date back to 1958, 1978, 1989, 1995, 1998, 2006 and 2014 (currently in force) (3).

Constant revision of the CMD, together with the development of courses of training and updating in medical ethics, medical deontology and bioethics, provides physicians with the coordinates needed in order to orientate their professional practice towards informed and responsible choices (4).

To date, no studies in Italy have investigated physicians' knowledge of deontological rules that guide the medical profession, their update, and their perception of the importance of ethical and deontological issues in their profession.

For this reason, we deemed it important to draw up and validate a cognitive instrument, in the form of a questionnaire, to survey the above mentioned knowledge among doctors and dentists enrolled in their respective professional registries. This need is particularly compelling in the light of ongoing work to draw up a European code of medical ethics capable of laying the foundations for the common implementation of medical practice (5). The present pilot study is to be extended, in the second phase, not only to all the others physicians from Genoa, but also to the entire nation in order to obtain more representative data that may confirm, or confute, the preliminary data gathered during the validation phase of the study.

Materials and Methods

The questionnaire

A preliminary draft of a questionnaire containing closed and semi-closed questions pertaining to various aspects, such as general knowledge of the deontological code and doctors' attitudes towards bioethical issues, was created in Italian. In order to determine whether the questions were clear, the preliminary draft was submitted to a panel of experts in clinical and psychometric properties.

After slight modification of the first draft, the final version of the questionnaire, comprising 12 closed and semi-closed questions, was administered by means of a Google Form Survey (*see Appendix 1*). Demographic characteristics, such as gender, nationality, religion, year of graduation, type of degree and healthcare sector (public or private), were also recorded during the Google Form Survey. The system automatically generated a web-link to the final version of the survey. This, together with a cover letter containing information on the aim of the study, the organization behind the study and assurance that respondents would remain anonymous, was sent via email to the participants (n=200).

The survey was sent on February 4th, 2016 and could be completed by participants online, with their answers being automatically and anonymously stored in an Excel file generated by the system. The questionnaire was again administered to participants on March 4th, 2016 by means of the same modalities as the first administration.

Participants

The study involved a sample of 200 medical doctors belonging to the Provincial Order of Physicians and Surgeons of Genoa, Italy. Some respondents possessed only a medical degree conferred between 1970 and 2014, while others also held a post-graduate qualification, such as a specialty degree, doctorate, or a diploma attesting completion of a course of updating or general medicine. In addition, the sector in which the individual worked (public, private or both) was also recorded. Only doctors who had completed the questionnaire during both sessions of administration were included in the analysis.

Data processing

A score from 0 to N (where 0 was assigned to the first answer and N was the number of possible answers per question) was assigned to the answers to questions Q1, Q4, Q5, Q6 Q9 and Q10. The answers to question Q3 were grouped into 5 classes. Specifically, class 1 comprised subjects who did not know any bioethical principle, and classes 2, 3, 4 and 5 were made up of subjects who knew 1, 2, 3, or 4 bioethical principles, respectively. Answers to Q7 were grouped into 3 classes; the first class was formed of subjects who answered that the ethical perspective provided "no solution" or "a normative solution" or "a normative solution and a critical methodology", class 2 comprised subjects who answered "Don't know", and class 3 comprised those who answered that the ethical perspective provided a critical methodology. Regarding question Q8, the answers were grouped into class 1 (subjects did not know bioethics), class 2 (subjects' bioethical knowledge came from 1 information source), class 3 (subjects obtained bioethical information from 2 sources) and so on up to class 5 (subjects obtained information from 4 sources).

Answers to question Q11 were grouped into 4 classes, where classes 1, 2, 3, and 4, respectively, comprised subjects who: (I) had never been faced with a bioethical issue, (II) took an independent decision on bioethical issues, without seeking help, (III) needed help to decide on a bioethical issue, and (IV) took a decision on bioethical issues after seeking help. Thus, questions Q1 to Q8 provided information on doctors' general knowledge of the deontological code, questions Q9 and Q10 provided some information on doctors' feelings towards bioethical issues, and question Q11 provided information on attitudes adopted in managing bioethical issues.

Statistical analysis

Continuous variables are reported as means and Standard Deviations (SD); categorical variables as number and/or percentage of subjects. Data were normalised by using the feature-scaling formula; a section total score was then obtained, indicating values in knowledge domains. To identify and describe the underlying latent construct of the questionnaire, Exploratory and Confirmatory Factorial Analyses were carried out by selecting the factors based on the number of eigenvalues greater than 1 and using the "varimax" rotation method. Reliability analysis was performed by using Cronbach's alpha. Items with Cronbach's alpha coefficients greater than 0.70 were considered acceptable.

To identify problematic items, the Cronbach's alpha improvement or worsening was studied by removing one by one items from the analysis.

Moreover, the stability test-retest was done asking the respondent to complete the questionnaire again 1 month after the first administration (Spearman's test for correlation between items). Differences in scores across groups were evaluated by means of the non-parametric Mann-Whitney test or the Kruskal-Wallis test, as appropriate, whereas any significant associations between continuous variables and scores were assessed by means of Spearman's rank-order correlation coefficient. *Post hoc* analysis was performed by means of the Mann-Whitney U-test, and p-values were adjusted for multiple comparisons by using the Bonferroni correction method. Differences with a p-value

<0.05 were deemed significant and data were acquired and analysed in R 3.2.2 software environment (6).

Results

A total of 200 medical doctors were asked to fill in the questionnaire; two questionnaires were subsequently excluded, as these respondents had failed to complete the second questionnaire administration. A total of 196 questionnaires (from 124 males and 72 females) were therefore analysed. The median age of respondents was 52 years (range=25-70). 116 (59.18%) subjects worked in the public sector, 20 (10.20%) in the private sector, and 60 (30.61%) in both sectors. The median year of graduation was 1988 (range=1970-2014). The majority of subjects (N=152; 77.55%) were Catholic, 38 (19.39%) were atheist and 6 (3.06%) were of other religions (2 Jewish and 4 Orthodox). The median duration of employment was 27.5 years (range=2-46). Forty-eight subjects had a medical degree, 116 had a medical specialization and the remaining 32 had both a medical specialization and another post-graduate qualification.

Regarding the doctors' views of bioethical issues (Table 1: Questions 9 and 10), about 51% (N=100) declared that they had had to consider ethical issues before continuing a procedure. The majority (N=58) of these 100 subjects reported that they had sometimes had difficulty in solving ethical problems. 88 subjects (45%) claimed that they had not had to consider ethical issues before continuing a procedure, while the remaining subjects answered "Don't know". Regarding the attitude adopted in managing bioethical issues, 16% had decided independently, 29% had needed help to decide, and 19% had decided after seeking help. Seventy subjects (36%) had never been faced with a bioethical issue. Regarding question Q8, the majority of subjects (N=96) obtained bioethical information from 1 source, while 52, 32 and 8 subjects answered that they learned about bioethics from 2, 3 and 4 sources, respectively. Two subjects answered "Don't know". More than half of the subjects declared that they had no or very little knowledge of the CMD (Q1: 25.51% and 28.57%, respectively). Forty-four subjects stated that they knew only a few points of the

CMD, while 36 stated having fair knowledge. Only 10 subjects (5.10%) claimed to know the CMD. All the CMD's ethical principles (Q3) were known to 24.45% of the subjects (N=48), while 27.55% (N=54) had no knowledge of these principles. 32, 30 and 32 subjects, respectively, knew one, two or three ethical principles (16.33%, 15.31% and 16.33%). Regarding the field of bioethics, ethics and medical ethics (Q5), 38.78% (N=76) of the subjects believed that bioethics, ethics and medical ethics had the same field of interest, while 39.8% (N=78) did not; 42 subjects declared that they did not know. Moreover, a high percentage (Q4: 64.29%) answered that did not know the difference among these disciplines; 24 subjects claimed that there was no difference, and 46 that there was. Analysis of the items designed to investigate the kind of perspective offered by bioethics with regard to morally difficult cases (Q7) showed that, in the view of 29.9% (N=58) of the subjects, the ethical perspective provided no solution or a normative solution, while 38.14% (N=74) answered that the ethical perspective provided a critical methodology. Sixty-two subjects (31.96%) answered "Don't know".

Regarding question Q2, most subjects (52.04%) said they did not know whether the current CMD fully covered the issues related to the medical profession; 32.65% (N=64) thought that it did so sufficiently, while 7.14% replied that it fully covered the issues, and another 7.14% felt it did so only slightly. Only two subjects (1.2%) responded negatively. Regarding the autonomy of the patient and physician (Q6), 58 subjects (29.59%) believed that the current CMD was balanced; 24 (12.24%) replied that the CMD was tilted in favor of patient autonomy, while only two subjects (1.02%) replied that the CMD was tilted in favor of the autonomy of the physician. The majority of subjects (57.14%) selected "Don't know".

The need for an organization to provide advice and guidance on bioethical issues (Q12; Ethics Committee) had been felt very often by 12 (6.12%) subjects, and sometimes by 74 (37.76%); 56 (28.57%) subjects declared that they had never felt this need, while 54 (27.55%) rarely had.

Concerning general knowledge of the deontological Code, the Exploratory Factor Analysis (FA), with a reduction to three-factor solutions, explained 52% of

the total variance. Factor 1 grouped Q4 and Q5, while Factor 2 regarded Q3, and Factor 3 combined Q1 and Q8. The subsequent confirmatory FA showed no significant underlying latent constructs (p-value=0.6247). Regarding the reliability analysis (*Internal consistency*), an acceptable Cronbach's alpha value of 0.71 was observed for the total score (Table 1: reliability analysis); the items were therefore combined in the further analysis. Significant Spearman Rho correlation coefficients were observed in the test-retest analysis (Table 1: stability analysis. p-values <0.05). Specifically, the median Rho was 0.90, with a range from 0.33 to 0.99 for Items 7 and 6, respectively. The median total score was 0.50 (range=0.08-0.96), indicating that knowledge of the deontological code was around 50%.

For what concerns the effect of demographic characteristics and professional training on the general knowledge of the CMD, a significant difference in the total score emerged among education groups (Table 2: p-value=0.0103). Specifically, the median total score among subjects with a specialist qualification was significantly lower than among those with only a medical degree (adjusted Mann-Whitney p-value=0.0122).

Discussion

This article describes the development and evaluation of a questionnaire aimed at studying physicians' knowledge of deontological rules that guide the medical profession, their update, and their perception of the importance of ethical and deontological issues in their profession.

One of the major challenges with surveys aimed at understanding the human beings, is that the population characteristics of interest may not be directly measured via single question. Factor analysis helps address this issue (7). Even if the exploratory factor analysis, performed on our data, showed possible underlying latent constructs, the subsequent confirmatory factor analysis demonstrated no significant results (p-value=0.6247) underlining that the hypothesized structure adequately did not fit the observed data.

Adequate evaluation of the reliability of a specific questionnaire involves analysis to determine internal consistency and test-retest reliability for all of the

Table 1. Reliability and stability analysis

N(%) = number of observations with percentage; Mean (SD) = Mean with Standard Deviation of the normalised and raw data for Reliability and Stability analysis, respectively; Cronbach's α = Cronbach's α is item deleted; Rho = Spearman's coefficient; p-value = p-value of the correlation test.

Knowledge questions	Subjects (%)	Reliability Analysis		Stability Analysis			
		Mean (SD)	Cronbach's α	Mean (SD) at T0	Mean (SD) at T1	Rho	p-value
Q1		0.36 (0.29)	0.63	1.49(1.20)	1.56(1.27)	0.90	<0.0001
<i>No</i>	50 (25.51%)						
<i>very little</i>	56 (28.57%)						
<i>just a few points</i>	44 (22.45%)						
<i>enough</i>	36 (18.37%)						
<i>Yes</i>	10 (5.1%)						
Q3		0.49 (0.39)	0.59	1.94(1.56)	2.01(1.55)	0.91	<0.0001
<i>no one</i>	54 (27.55%)						
<i>One</i>	32 (16.33%)						
<i>Two</i>	30 (15.31%)						
<i>three</i>	32 (16.33%)						
<i>Four</i>	48 (24.49%)						
Q4		0.75 (0.36)	0.59	1.52(0.71)	1.53(0.68)	0.94	<0.0001
<i>No</i>	24 (12.24%)						
<i>Yes</i>	46 (23.47%)						
<i>I don't know</i>	126 (64.29%)						
Q5		0.51 (0.44)	0.66	1.01(0.89)	0.96(0.85)	0.88	<0.0001
<i>Yes</i>	76 (38.78%)						
<i>I don't know</i>	42 (21.43%)						
<i>No</i>	78 (39.8%)						
Q7		0.53 (0.41)	0.71	1.08(0.83)	0.86(0.80)	0.33	0.0011
<i>no critical</i>	58 (29.9%)						
<i>methodology</i>	62 (31.96%)						
<i>I don't know</i>	74 (38.14%)						
<i>critical methodology</i>							
Q8		0.43 (0.23)	0.64	1.73(0.90)	1.68(0.91)	0.74	<0.0001
<i>no one</i>	2 (1.05%)						
<i>One</i>	96 (50.53%)						
<i>Two</i>	52 (27.37%)						
<i>three</i>	32 (16.84%)						
<i>Four</i>	8 (4.21%)						
Other questions							
Q2				1.42(1.55)	1.53(1.52)	0.88	<0.0001
<i>I don't know</i>	102 (52.04%)						
<i>No</i>	2 (1.02%)						
<i>Very little</i>	14 (7.14%)						
<i>Enough</i>	64 (32.65%)						
<i>Yes</i>	14 (7.14%)						

(continued)

Table 1 (continued). Reliability and stability analysis

N(%) = number of observations with percentage; Mean (SD) = Mean with Standard Deviation of the normalised and raw data for Reliability and Stability analysis, respectively; Cronbach's α = Cronbach's α is item deleted; Rho = Spearman's coefficient; p-value = p-value of the correlation test.

Knowledge questions	Subjects (%)	Reliability Analysis		Stability Analysis			
		Mean (SD)	Cronbach's α	Mean (SD) at T0	Mean (SD) at T1	Rho	p-value
Q6				1.03(1.34)	0.97(1.29)	0.99	<0.0001
<i>I don't know</i>	112 (57.14%)						
<i>the CDM is in favour of the patient</i>	24 (12.24%)						
<i>the CDM is in favour of the doctor</i>	2 (1.02%)						
<i>balanced</i>	58 (29.59%)						
Q9				1.47(0.58)	1.45(0.58)	0.95	<0.0001
<i>I don't know</i>	8 (4.08%)						
<i>No</i>	88 (44.9%)						
<i>Yes</i>	100 (51.02%)						
Q10				1.77(0.87)	1.70(0.89)	0.85	<0.0001
<i>Never</i>	6 (6.12%)						
<i>Rarely</i>	16 (16.33%)						
<i>sometime</i>	58 (59.18%)						
<i>very often</i>	18 (18.37%)						
Q11				1.32(1.15)	1.31(1.19)	0.91	<0.0001
<i>Never confronted</i>	70 (35.71%)						
<i>Self-decision</i>	32 (16.33%)						
<i>Help request</i>	56 (28.57%)						
<i>Self-decision with help request</i>	38 (19.39%)						
Q12				1.21(0.93)	1.29(0.92)	0.86	<0.0001
<i>Never</i>	56 (28.57%)						
<i>Rarely</i>	54 (27.55%)						
<i>Sometime</i>	74 (37.76%)						
<i>Very often</i>	12 (6.12%)						

psychometric measures. The internal consistency of a specific questionnaire is evaluated according to each domain, assuming that individual questions in each domain correspond to the same topic. It is known that the internal consistency coefficient increases as the number of questions for a specific domain increases (8), and that the internal consistency coefficient is best evaluated by means of Cronbach's alpha coefficient. An optimum Cronbach's coefficient should range between 0.70 and 0.80. In the present study, this coefficient was 0.71 for the total score of knowledge, which

can be considered satisfactory. Looking at the omitted item Cronbach's alpha coefficient (Table 1: Reliability Analysis), the Cronbach's alpha increases from 0.59 to 0.71, when questions Q1 Q3, Q4, Q5, Q7 and Q8 were respectively removed from the analysis one by one. These results suggest that questions Q1 Q3, Q4, Q5, Q7 and Q8 are the best indicators of the general knowledge of the deontological Code.

In the context of surveys, test-retest is usually in the form of an interview-reinterview procedure, where the survey instrument is administered on multiple

Table 2. Descriptive statistics

Result are expressed in median with range or the Spearman's rank-order correlation coefficient for categorical and continuous characteristics, respectively. Characteristic = variable taken into account; p-value = p-value of the Spearman's rank-order correlation test for continuous variables or p-value of the non-parametric Kruskal–Wallis test (marked with *) or Wilcoxon test (marked with **) for categorical variables.

Characteristic	Descriptive statistics	Knowledge Total Score	p-value
<i>Median (Range)</i>		0.50 (0.08 : 0.96)	
Working time	27.5 (2 : 46)	rho = -0.15	0.1381
Age	52 (25 : 70)	rho = -0.13	0.2140
Gender			0.7397 **
<i>Male</i>	62 (63.27%)	0.50 (0.08 : 0.96)	
<i>Female</i>	36 (36.73%)	0.50 (0.12 : 0.83)	
Religion			0.2741 *
<i>catholic</i>	76 (77.55%)	0.50 (0.08 : 0.92)	
<i>Althea</i>	19 (19.39%)	0. (0.17 : 0.96)	
<i>Other</i>	3 (3.06%)	0.42 (0.17 : 0.42)	
Education			0.0103 *
<i>Degree</i>	24 (24.49%)	0.67 (0.12 : 0.88)	
<i>Specialist</i>	58 (59.18%)	0.46 (0.08 : 0.96)	
<i>Specialist and other</i>	16 (16.33%)	0.48 (0.38 : 0.92)	
Job			0.5823 *
<i>Public</i>	58 (59.18%)	0.50 (0.08 : 0.96)	
<i>Private</i>	10 (10.2%)	0.44 (0.21 : 0.83)	
<i>Public and private</i>	30 (30.61%)	0.52 (0.21 : 0.92)	

occasions (usually twice), and the responses on these occasions are compared (9). In the present study, the test-retest analysis, based on comparing results of the first questionnaire administration with those obtained 1 month later, shows excellent correlation coefficients. In particular, the majority of questions were highly correlated (Table 1: Stability Analysis), suggesting that the respondents tended to interpret the questions and response categories in the same way. These data provide generally consistent results and they show that questionnaire is able to reveal physicians' knowledge of deontological rules that guide the medical profession, their update, and their perception of the importance of ethical and deontological issues in their profession.

The scant knowledge of the deontological rules and ethical principles, as it comes out from the preliminary results, has a negative connotation that suggests that a fundamental instrument such as CDM is not perceived by physicians as an essential guide to

everyday clinical practice. The knowledge of the rules and their update is, for instance, absolutely mandatory also because of the existence of disciplinary sanctions. These critical points may stem from a lack of attention, during university training, to the importance that the deontological Code has in the professional life of the doctor. The substantial inability of the respondents to provide a precise answer regarding the ability of the current CMD to fully cover the issues facing the medical profession confirms these major gaps in knowledge.

A key point is the opportunity to investigate the fundamental principles on which medical ethics is based (10) and which are amply agreed upon by the international medical community. All medical professionals should be aware of these principles, which inspire the profession to which they belong. Indeed, the technical and scientific knowledge that underpins the services provided by the physician should be accompanied by knowledge of these ethical principles, which

are able to guide the medical practice by a moral perspective. These principles above all focus the doctor-patient relationship, stressing a good communication in order to highlight the central position of the patient and, at the same time, the physician's independence with also regard to controversial issues, such as ethically or scientifically sensitive issues (11, 12). In addition, the ethical knowledge can be interpreted as a fundamental instrument to recognize a global vision of the patient as essential element to achieve the treatment's goals (13, 14). The fact that this situation seems to be equally widespread in the various healthcare settings, both public and private, is also cause for concern. This interpretation also seems to be confirmed by our analysis of the replies concerning physicians' opinions of the stance taken by the CMD with regard to the degree of autonomy of the patient and of the doctor in the therapeutic relationship. Indeed, over half of the respondents were unable to answer the question. However, of those who did provide an answer, it is interesting that the majority judged these two types of autonomy (doctor-patient) to be correctly balanced, while only a small percentage deemed that this relationship was excessively tilted in favour of the patient (15, 16).

A possible explanation for this finding may lie in the steady increase in cases of claims for damages in recent years (17), especially those involving lawsuits (18), which may have fostered the perception that the patient is excessively safeguarded by the law. A different reading of this finding, however, may be that the patient is perceived as being particularly vulnerable and, consequently, requiring greater attention and protection on the part of both the CMD and the law (19)

Interestingly, the preliminary data revealed that knowledge of the CMD was greater among subjects who had only a medical degree than among those with specialty or other postgraduate qualifications. This might be because the CMD is more familiar to younger individuals, who have entered the world of work more recently and who probably maintain a closer link with their academic background. Indeed, in Italy in recent years, ethical and deontological issues have received greater emphasis in medical faculties than in the past, though the situation is still partial and heterogeneous (20). Another possibility is that "young" professionals

may be more inclined to acquire knowledge of deontological rules in order to have a source of reference that can orientate their everyday medical practice, while their "older/more expert" counterparts may tend to believe that they have already absorbed the principles of medical morality, and therefore act autonomously.

Although 50 out of 196 respondents were aware that medical ethics, bioethics and medical deontology cover overlapping areas of intervention, more than half admitted that they did not know the differences among them. This can probably be ascribed to two main factors:

1. frequent confusion regarding the key terms of these disciplines;
2. the lack, as mentioned above, of thorough and homogeneous teaching of these disciplines in degree courses in medicine, during which emphasis is chiefly placed on technical and scientific aspects. Moreover, when these disciplines are taught, there is a tendency to focus only on a few specific issues, such as informed consent to therapy and questions of the beginning and end of life (21, 22).

Examination of the preliminary data also reveals that only a small proportion of physicians are aware of the different perspective of critical analysis adopted by bioethics in comparison with the strictly directive orientation assumed by deontology and the law. These findings indicate the need to create areas in which a clinical case can be analysed from different standpoints – ethical, deontological and juridical – in order to highlight both the points of contact and the differences among these various disciplines with which the medical profession is called upon to deal (23, 24).

Within medical training, particular attention should therefore be devoted to the specificities of medical deontology, on the one hand, and to those of the law, on the other.

The scant knowledge of the deontological rules and ethical principles should constitute a major critical point, given that half of the respondents stated that they had had to decide on ethical grounds whether or not to pursue a treatment and that they had encountered difficulty in solving the related ethical problem.

These data, even if obtained from a small sample, prompt us to stress the importance of implementing

initiatives to improve the training and ethical competence of doctors; this would involve developing, right from the outset, the individual's ability to recognise the moral dimension of medical practice and to identify the critical aspects of the various cases encountered in daily practice (25). Indeed, it is this very lack of synergy between technical-scientific skills and ethics that can give rise to deleterious effects on the proper functioning of healthcare personnel, thereby undermining, at least in part, their professional qualification. A thorough review of traditional curricula, together with the introduction of innovative teaching methods that prompt methodological reflection through systematic discussion of ethical problems, could help students to develop the necessary attitudes and skills for their future profession (26).

The validation study has some limitations. First, the relatively small and possibly homogeneous sample. The generalizability of this study should be somewhat limited in that it was conducted in only one geographic area (Genova province). Testing of the general knowledge of the deontological Code in other settings will increase confidence in the general applicability of the results. Second, the sample size was not calculated beforehand.

Conclusions

In summary this study showed that, the questionnaire has excellent internal consistency making it useful to study physicians' knowledge of deontological rules and ethical principles. Based on the confirmatory factor analyses of the data no subscales were identified. However, a few potential issues were also identified.

The preliminary data reveal that physicians have scant knowledge of deontological rules and ethical principles. This shortcoming, whereas it will be confirmed, could be particularly worrisome in the light of the frequency of the ethical problems encountered in medical practice. Our next investigation is to be conducted at the provincial level and should provide indications that can be used to check this interpretation and to focus on the implementation of ongoing training that is appropriate to physicians' requirements. The second phase of the study will involve distributing the

questionnaire to a broader and more representative sample.

Conflict of interest: None to declare

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Appendix 1

The original survey with cover letter sent to Italian participants

Dear Colleague,

We need your help in order to validate a questionnaire on doctors' knowledge of deontological rules and ethical principles. We would therefore be grateful if you could connect to the link below and fill in the questionnaire.

It will only take you a few minutes to fill in the questionnaire, but this will enable us to collect important information that can be used to design training schemes that are better suited to the complexity of the field of medicine.

We thank you in advance for your precious cooperation.

ORIGINAL SURVEY

Survey of knowledge of the ethical principles of the 2014 Code of medical deontology

To fill it in, please access the following page:

https://docs.google.com/forms/d/1bi5gakrSDBgqG2NVRs0A2o911XJ9RZZD7U_typeH5Zmg/viewform?c=0&w=1&usp=mail_form_link

Age _____

Sex male female

Number of children (0, 1, 2, 3 etc.) _____

Nationality Italian Other:

Religious faith

Christian Catholic Christian Orthodox Muslim

Jewish None Other:

Year of graduation _____

Qualifications held

- a) Research Doctorate N _____
- b) Training course N _____
- c) Specialty degree in _____
- d) Other qualification (specify) _____

Activity carried out in

- a) Public sector
- b) Private sector
- c) Both

Q1: Do you know the CMD (2014)?

- a) No
- b) Very little
- c) Only some points
- d) Quite
- e) Yes

Q2: Do you think the current CMD (2014) fully covers the issues facing the medical profession?

- a) Don't know
- b) No
- c) Very little
- d) Quite
- e) Yes

Q3: Which of the following bioethical principles do you know?**NB: You may tick more than one option**

- a) Non maleficence
- b) Beneficence
- c) Self-determination
- d) Justice
- e) None

Q4: In your opinion, is there any difference between bioethics, deontology and medical ethics?

- a) No
- b) Don't know
- c) Yes

Q5: In your opinion, do bioethics, medical ethics and the CMD have the same area of interest?

- a) Yes
- b) Don't know
- c) No

Q6: Regarding the patient's self-determination, do you think the current CMD is:

- a) I don't know the position taken by the CMD
- b) Excessively protective of the patient's rights
- c) Excessively protective of the doctor's rights
- d) Well-balanced

Q7: Regarding the critical cases you are sometimes faced with, do you think the ethical perspective offers:

- a) No solution
- b) A normative solution
- c) A normative solution and a critical methodology
- d) Don't know
- e) A critical methodology for examining the case

Q8: From which sources did you obtain your current knowledge of bioethics?

NB: You may tick more than one option

- a) University studies
- b) Only during post-graduate training
- c) Scientific journals
- d) Conventions, seminars
- e) The work environment
- f) Newspapers, radio, TV
- g) Other _____

Q9: Have you ever had to decide on ethical grounds whether or not to go on with a procedure?

- a) Don't know
- b) No
- c) Yes

Q10: If you have answered "yes" to the previous question, have you ever had difficulty solving ethical problems?

- a) Never
- b) Rarely
- c) Sometimes
- d) Very often

Q11: When faced with an ethical problem, have you...?

NB: You may tick more than one option

- a) Consulted other colleagues
- b) Consulted your professional association
- c) Consulted the ethics committee
- d) Consulted the section/unit of bioethics and/or legal medicine
- e) Taken a decision autonomously
- f) I have never been faced with an ethical problem

Q12: In your professional activity, have you ever felt the need for an organism (ethics committee) to provide consultation or approval on questions of bioethics?

- a) Never
- b) Rarely
- c) Sometimes
- d) Very often