

NURSE PRESCRIBING. THE KNOWLEDGE OF NURSING AND MIDWIFERY STUDENTS REGARDING NEW PROFESSIONAL COMPETENCES. POLAND-WIDE MULTICENTER STUDY.

Type:

Original article

Abstract:**Introduction**

Since 1 January 2016 certain groups of nurses and midwives (N&Ms) have been entitled to administer certain medicines to patients and issue perceptions for it (independent nurse prescribing - INP), issue prescriptions upon physician's order (supplementary nurse prescribing - SNP) and to refer patients to determined diagnostic tests. Students' knowledge on the possibility and principles of nurse prescribing seems to be important.

Aim of study

To evaluate the knowledge of 1st year students of Bachelor's studies in nursing and midwifery on the possibility and principles of prescribing authorities of N&Ms in Poland.

Material and methods

2338 1st year students of Bachelor's nursing (1941) and midwifery (398) studies from 26 state higher vocational schools of universities. Own questionnaire assessed in the pilot study; the internal reliability of measurement on the knowledge rating scale was estimated by calculating Cronbach's alpha reliability coefficient

Results

Group of 11% to 64% (depending on a question) gave correct answers. 14 % knew criteria which N&Ms are required to meet in order to refer patients to diagnostic tests. Almost 2/3 of the interviewees also knew where to find the list of active substances allowed in medicines independently prescribed by N&Ms. The internal reliability of the knowledge rating scale was 0,389.

Conclusions

The knowledge of students regarding N&Ms' prescribing powers is superficial, but most of respondents knew the crucial issues. It is necessary to correctly determine education standards and to focus on their implementation tools, so that those concerned could acquire desired competences during studies.

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Keywords:

Drug Prescription, Legislation Drug, Legislation Nursing, Schools Nursing

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1 **NURSE PRESCRIBING. THE KNOWLEDGE OF NURSING AND MIDWIFERY**
2 **STUDENTS REGARDING NEW PROFESSIONAL COMPETENCES. POLAND-**
3 **WIDE MULTICENTER STUDY.**

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42 The knowledge of students regarding N&Ms' prescribing powers is superficial, but most of
43 respondents knew the crucial issues. It is necessary to correctly determine education standards
44 and to focus on their implementation tools, so that those concerned could acquire desired
45 competences during studies.

46 **Key words:** Drug Prescription; Legislation, Drug; Legislation, Nursing; Schools, Nursing;

47 Introduction

48 Since 1 January 2016 certain groups of nurses and midwives (N&Ms) have been entitled to
49 administer certain medicines to patients and issue perceptions for it (independent nurse
50 prescribing - INP), issue prescriptions upon physician's order (supplementary nurse prescribing
51 - SNP) and to refer patients to determined diagnostic tests. The new competences stem from an
52 amendment to the Act on nurse and midwife professions enacted on 22 July 2014[1]. The scope
53 of N&Ms' powers depends on the scope of training they received.

54 For INP, N&Ms are required to hold a Master's degree in nursing/midwifery or a Specialist's
55 degree in nursing and to have a specialist course in independent and supplementary prescribing
56 completed. Whereas for SNP, N&Ms will be required to hold a Bachelor's degree in
57 nursing/midwifery or a Specialist's degree in nursing and to have a specialist course in
58 supplementary prescribing completed. No special courses will be required when curricula of
59 such courses form part of a university curriculum. The first year of students to acquire
60 prescribing powers began nursing/midwifery studies in 2016.

61 It should be highlighted that INP of certain medicines (the list of active substances which are
62 allowed in such medicines is set forth in the Regulation of the Minister of Health[2]) will be a

64 right, rather than a duty, of N&Ms. SNP, in turn, will be obligatory as any other physician's
65 order.

66 N&Ms will be entitled to independent and supplementary prescribing of reimbursable
67 medicines, including medicines for those who enjoy special entitlements, for instance disabled
68 veterans or honorary blood donors [3]. In such a case, N&Ms are obliged to point out a rate of
69 patient's share in financing, but only if a given medicine has at least two different rates of
70 patient's share in financing assigned (e.g. 30% for indication X and 50% for indication Y). If a
71 given medicine has only one rate of patient's share in financing assigned, the rate of the share
72 do not have to be placed on a prescription [4]. It should also be mentioned that only a Primary
73 Care Nurse will be entitled to prescribe free of charge medicines for people who are over 75
74 years old.

75 Moreover, the amendment empowers N&Ms to independently refer patients to diagnostic tests.
76 This power will be vested in N&Ms who hold a Bachelor's degree in nursing/midwifery or a
77 Specialist's degree in nursing. The list of such tests is also set forth in the Regulation of the
78 Minister of Health [2].

79 Nursing and midwifery students who begin their studies in the academic year 2016/2017 will
80 acquire the majority of the mentioned powers upon graduating and claiming their right to
81 exercise the profession. *Since the research covers only 1st year students, their knowledge have
82 been assessed before the pharmacology training. Content and quality of such pharmacology
83 course can be an important factor of students' knowledge in the moment of graduation [5,6].
84 Hence their knowledge regarding the possibility and principles nurse prescribing seems to be a
85 vital starting point for further studies in the subject area.*

86 Aim of Study

88 The aim of the study was to evaluate the knowledge of 1st year students of Bachelor's studies
89 in nursing and midwifery on the possibility and principles of independent prescribing,
90 supplementary prescribing and referring patients to diagnostic tests by certain groups of nurses
91 and midwives in Poland.

92 **Material and methods**

93 **Study design**

94 This study is yet another stage of a project which analyses the knowledge and attitudes of
95 different groups of stakeholders about expanding nurses' and midwives' competences in the
96 field of INP, SNP and referring patients to determined diagnostic tests. It was preceded by a
97 pilot study carried out in a group of students of the Medical University of Warsaw [7] and by
98 the assessment of validity and reliability of a questionnaire [8].

99 As a result of preliminary studies, necessary corrections to the questionnaire were made and the
100 Poland-wide research project was initiated in a group of 1st year students of Bachelor's studies
101 in nursery and midwifery. The study will be repeated in 2 years in the same group of people –
102 on a day prior to their graduation in Bachelor's studies and acquisition of part of the professional
103 qualifications.

104 **Selection of Study Group**

105 The author's objective was to conduct a study in a representative and as broad as possible group
106 of 1st year students of Bachelor's studies in nursing and midwifery in Poland. To achieve that,
107 invitations to participate in the study were sent out to 38 public education centers, including all

109 23 state higher vocational schools and all 14 universities which conduct training in at least one
110 of these fields.

111 26 centers provided positive answers expressing their willingness to undertake the cooperation,
112 and ultimately the students of these centers took part in the study. Thus the response rate at the
113 level of the engaged centers was 68%. Every center established the local coordinator who
114 passed paper questionnaires to the students. Fulfilled were sent to the national coordinator of
115 the study and analyzed. The list of the centers, together with the number of students who took
116 part in the study in a given center, is presented in **Table 1**.

117 It should be stated that due to such a selection of study group, the study group meets the criteria
118 of representativeness for a group of 1st year students of Bachelor's studies in nursing and
119 midwifery at state universities and higher vocational schools in Poland.

120 Questionnaire

121 The study was conducted using a questionnaire which had been prepared by the authors and
122 whose validity and reliability had been assessed in the pilot study [8]. On the basis of the pilot
123 study, the questionnaire was adjusted to the needs of this study.

124 The questionnaire focused on the knowledge of the respondents on the new professional
125 competences of nurses and midwives in the field of independent nurse prescribing,
126 supplementary nurse prescribing and referring patients to diagnostic tests and on the manner of
127 exercising these competences. It consisted of 10 questions, with four answer choices each of
128 which only one answer was correct. In every question a respondent could choose an "I don't
129 know" answer option.

130 Statistical Analysis

132 The obtained results were evaluated by determining structural indicators. Moreover, the internal
133 reliability of measurement on the knowledge rating scale was estimated by calculating
134 Cronbach's alpha reliability coefficient. All test positions were also evaluated by determining
135 parameters of differentiating capacity for correct option and proper functioning of distractions
136 (incorrect options). Differentiating capacity (discrimination index), which assesses the relation
137 between test positions and the overall test result, should be of at least 0.20 [9]. Distractions with
138 a structural indicator above 0.05 were deemed functional [10]. The assessment of distractions'
139 functioning took into account "I don't know" option. All calculations were made using
140 STATISTICA statistical package, version 13.1 (StatSoft. Inc.) under the license of the Medical
141 University of Warsaw.

142 **Bioethics Committee**

143 This study is not subject to an opinion of the Bioethics Committee, since pursuant to a
144 communication placed on the website of the Bioethics Committee of the Medical University of
145 Warsaw "the Committee does not issue opinions on questionnaire based studies, retrospective
146 studies and non-invasive research" [11].

147 **Results**

148 **Study group**

149 2338 1st year students of Bachelor's studies participated in the study, including 398 (17%)
150 midwifery students and 1941 (83%) nursing students. 7% of the study group were men and 93%
151 women. 44% of the respondents stated as their place of residence a village, 29% a town with
152 up to 100 thousand inhabitants, 16% a city with 100 - 500 thousand inhabitants. The
153 interviewees' average age was 21.4 years and the median age was 20 years (min. 18, max. 53,
154 SD = 3.49, CV= 16.3%) .

156 In the study group 40% reported that they had already participated in some form of training in
157 the field of medical law. When it comes to additional education, 7% graduated in other studies
158 and 13% still attend classes at another field.

159 From the total number of 2353 questionnaires which authors received from local coordinators,
160 25 were excluded due to the fact, that more than one answer was marked. Comparing with the
161 total number of enrolled 1st year nursing and midwifery students (3378), the overall response
162 rate was equal 70%. Detailed information regarding distribution of respondents with respect to
163 the centers and individual response rates have been provided in **Table 1**.

164 **Students' knowledge**

165 Correct answers to questions on the new advanced competences of nurses and midwives
166 (depending on a question) were given by a group of 11% to 64% of the respondents. The fewest
167 correct answers were given to questions on placing the rate of patient's share in financing on a
168 prescription (11%) and on the criteria which N&Ms will be required to meet in order to
169 independently refer patients to diagnostic tests (14%). One in four of the interviewees is aware
170 that independent prescribing is a right, not a duty, of N&Ms qualified in this regard.

171 Around half of the respondents knew which legal act was amended, when the amendment
172 entered into force, and what criteria N&Ms would have to meet in order to exercise prescribing
173 powers. Almost 2/3 of the interviewees also knew where to find the list of active substances
174 allowed in medicines independently prescribed by N&Ms. Detailed results, depicting the
175 answers of the respondents to particular questions, are presented in **Table 2**.

176 The internal reliability of the knowledge rating scale estimated using standardized Cronbach's
177 alpha amounted to 0.389. When it comes to differentiating capacity, only in the case of question
178 number 6 (*Please indicate the criteria which a nurse or midwife will have to meet in order to*

180 *independently refer patients to determined diagnostic tests*) a sufficient discriminatory capacity
181 was not obtained (correlation < 0.20). For four questions, estimated differentiating capacity was
182 high or very high (correlation > 4.00). A detailed list of results of the analysis of differentiating
183 capacity of particular questions is presented in **Table 3**.

184 The results of analysis of functioning of particular distractions (incorrect options) indicate that
185 only in the case of question 9 (*Will nurses and midwives be entitled to prescribe free of charge*
186 *medicines for those who enjoy special entitlements (disabled war and military veterans,*
187 *distinguished honorary blood donors)?*) a low structural indicator was noted for one of options
188 (< 0.05). For the other questions 100% functionality of all options was demonstrated (**Table 4**).

189 Discussion

190 Nurses' and midwives' powers to independent prescribing and supplementary prescribing have
191 been in force since the beginning of 2016. Also since that time specialist courses have been
192 organized which enable N&Ms to exercise their powers, and those concerned have begun to
193 exercise their competences.

194 It should be noted that nursing and midwifery graduates who begin their studies in the academic
195 year 2016/2017 will be allowed to exercise their new professional competences without any
196 additional courses. For that reason, it was necessary to thoroughly study the knowledge of
197 students of these fields on the possibility and principles of N&Ms' independent prescribing and
198 supplementary prescribing.

199 This work is the first multicenter and representative study of the knowledge of students who
200 begin Bachelor's studies in nursing and midwifery on the subject matter in question. Therefore,
201 the study's results might be a valuable material for decision-makers of the Polish health policy
202 and for the nursing, midwifery and medical communities.

204 The study's results indicate that students' level of knowledge on M&Ns' independent and
205 supplementary prescribing powers is relatively low. On average less than half of the students
206 was able to choose correct answers to the questions posed. At the very beginning of the
207 discussion, however, it should be stressed that the study covered only students who begin their
208 studies, hence the obtained results are merely a starting point. The results cannot form the basis
209 for the assessment of students' competences acquired in the course of studies or of effectiveness
210 of academic education in this regard.

211 Almost half the respondents was aware which legal act contains regulations on N&Ms
212 prescribing. Also around half the interviewees knew what criteria nurses and midwives have
213 to meet in order to begin to exercise the new professional competences. Two-thirds of the
214 respondents, in turn, knew where to look up the list of medicines which can be independently
215 prescribed by N&Ms. The mentioned results seem to suggest that a large portion of students
216 has general understanding of the subject and their knowledge is frequently wider than the one
217 of practicing nurses [12].

218 However, in many other issues the knowledge of students is relatively scarce. Only one in four
219 of the polled knows that independent prescribing will be a right, and not a duty, of nurses and
220 midwives. Almost half the students did not know either that the regulations which empower
221 N&Ms to supplementary prescribing had already entered into force at the time when the study
222 was conducted. When it comes to such basic information, a higher percentage of correct
223 answers could be expected. On the other hand, 1st year students cannot be expected to have
224 detailed expertise in the principles of prescribing. Therefore, the respondents' scarce knowledge
225 comes as no surprise when it comes to questions about placing the rates of patient's share in
226 financing or the possibility of "discount" prescribing for those who enjoy special entitlements.

227 In the Polish scientific literature, a few academic publications have been found on the
228 knowledge of students on N&Ms' powers to independent prescribing and supplementary
229

230 prescribing [7,13-14]. Whereas in the Polish Medical Bibliography base (search descriptor:
231 PRESCRIPTIONS – NURSING; search's date: 1997-2017) two works have been found on the
232 topic of nurse prescribing [15,16].

233 The results of the authors' study may be directly compared to studies conducted in 2015 in a
234 group of students of different fields [13]. In that study, a group of 535 students of the following
235 fields: medicine, nursing, midwifery and public health, was asked questions on the scope of
236 powers of N&Ms. The broadest knowledge was demonstrated by nursing students and the
237 poorest – by medicine students. When it comes to overall results, 39% of the respondents knew
238 in which act the issues in question were regulated, 29% knew when new N&Ms' powers would
239 enter into force, and 30% knew where the list of medicines which N&Ms may independently
240 prescribe could be found. Those results are similar to the ones obtained in this study.

241 Whereas in a work of Zarzeka *et al.* [14] nursing students of different years were asked about
242 N&Ms powers. Within a certain scope, the results obtained were more satisfactory than in this
243 study: 69% of the respondents knew which legal act had introduced the powers, and 75% knew
244 that the new competences in independent prescribing would be a right, rather than a duty, of
245 N&Ms. Answers to other questions were similar to the ones obtained in this study: 29% knew
246 which groups of N&Ms had been entitled to supplementary prescribing, 51% knew the legal
247 act which regulated the list of active substances allowed in medicines independently prescribed
248 by N&Ms.

249 In the international academic literature many publications on nurse prescribing were found [17-
250 19]. Works on students' knowledge in this regard constituted a small portion of them [20-22].
251 It should also be noted that studies on the knowledge of nursing students about supplementary
252 nurse prescribing rather aimed to assess pharmacological knowledge.

254 The issue of prescribing powers of N&Ms was raised by Hay, Bradley and Nolan in their work
255 [17]. The study was carried out in Great Britain, where in 2003 nurses became entitled to
256 supplementary prescribing of a determined range of medicines “according to clinical
257 management plan”, established by a doctor in consultation with a patient. In 6 focus groups
258 both physicians and nurses had superficial knowledge on this kind of competences. The
259 majority of the polled only knew that a nurse would be entitled to independently modify a
260 medicine dosage. Only one person answered entirely correctly. This example illustrates that
261 low awareness of the introduced changes, also amongst those most concerned, is not an isolated
262 phenomenon.

263 The prescribing competences of nurses is also a relevant topic in Spain. The knowledge on this
264 area of Master’s degree students, among others, was examined. 73% of the respondents claimed
265 to know about legal changes in this regard. Nevertheless, 95% of them admitted to gaps in such
266 knowledge [20].

267 Whitechain *et al.* [21], on the other hand, were examining whether nursing students were able
268 to identify errors in prescriptions. The respondents found it problematic. With five prescriptions
269 containing errors, only 7% of the respondents were able to identify all five of them. 13%
270 recognized four errors, 22% three errors, 27% only two errors, and 20% only one error.

271 Last but not least, the knowledge of students in the moment of graduation will depend on
272 content and the quality of the pharmacology training, which they get during their academic
273 education. Lim & Honey [5] suggests, that “integrated approach” in pharmacology teaching,
274 which includes e.g. elements of law and ethics or communication skills was giving better results
275 that education focused specific on the pharmacology issues.

276 Limitations

278 This work is not free from certain limitations. Although an invitation to conduct the study was
279 addressed to all Universities and State Higher Occupational Schools which offer education in
280 nursing and midwifery, some centers did not undertake cooperation. Furthermore, some other
281 schools which offer education in nursing and midwifery, in particular private universities, were
282 not covered by the study. Nonetheless, group selection and the sample examined lead to the
283 conclusion that the study is representative within a group of 1st year students of Bachelor's
284 studies in nursing and midwifery who undergo education in state higher schools and
285 universities.

286 Conclusions

287 The knowledge of students of nursing and midwifery on the issue of N&Ms' powers to
288 independent and supplementary prescribing is quite superficial. It is comparable to the
289 knowledge of students of different medical fields, including higher years students.

290 The study's results constitute a thorough diagnosis of the current knowledge of nursing and
291 midwifery students on N&Ms' advanced professional competences. While improving the
292 curriculum of these fields, it is necessary to correctly determine education standards and to
293 focus on their implementation tools, so that those concerned could acquire desired competences
294 during studies.

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Table 1. Structure of the study group

Center	Study Participants		Number of all nursing or midwifery students	Response rate
	Number	%		
Medical University of Silesia in Katowice	258	11	317	81%
Medical University of Warsaw	189	8	368	51%
Medical University of Łódź	184	7,8	278	66%
Medical University of Wrocław	150	6,4	154	97%
Pomeranian Medical University in Szczecin	140	5,9	187	75%
Medical University of Lublin	124	5,3	230	54%
Jan Kochanowski University in Kielce	117	5	141	83%
Medical University of Białystok	108	4,6	116	93%
State Higher Vocational School in Tarnów	105	4,5	115	91%
State Higher Vocational School in Plock	104	4,4	121	86%
State Higher Vocational School in Krosno	93	4	122	76%
University of Rzeszów	90	3,8	139	65%
State Medical Higher Vocational School in Opole	85	3,6	152	56%
State Higher Vocational School in Kalisz	70	3	104	67%
State Higher Vocational School in Nowy Sącz	65	2,8	93	70%
State Higher Vocational School in Ciechanów	61	2,6	85	72%
State Higher Vocational School of Podhale in Nowy Targ	54	2,3	79	68%
State Higher Vocational School in Biała Podlaska	51	2,2	83	61%
State Higher Vocational School in Leszno	51	2,2	70	73%
State Higher Vocational School in Tarnobrzeg	47	2	94	50%
State College of Computer Science and Business Administration in Łomża	39	1,7	60	65%
State Higher Vocational School in Oświęcim	39	1,7	64	61%
State Higher Vocational School in Suwałki	36	1,5	41	88%
Karkonosze State Higher School in Jelenia Góra	35	1,5	47	74%
State Higher Vocational School in Chełm	30	1,3	70	43%
State Higher Vocational School in Piła	28	1,2	48	58%
TOTAL	2353*	100	3378	70%

*25 questionnaires with more than one answer marked had been excluded.

Table 2. Knowledge of nursing and midwifery students

Question	Answer	n	%
1. Which act sets forth nurses' and midwives' professional competences regarding independent prescribing of particular medicines and supplementary prescribing?	In the Act of 12 May 2011 on reimbursement of medical products, foodstuffs intended for particular nutritional uses, and medical devices	296	12,7
	In the Act of 15 July 2011 on nurse and midwife professions*	1071	45,8
	In the Act of 1 July 2011 on nurses and midwives' professional association	145	6,2
	I don't know	812	34,7
	No answer	14	0,6
2. When will particular groups of nurses and midwives in Poland be entitled to independent prescribing of particular medicines and to supplementary prescribing?	From 1 January 2017	238	10,1
	From 1 July 2016	371	15,9
	From 1 January 2016*	1355	58
	I don't know	366	15,7
	No answer	8	0,3
3. Will independent prescribing of particular medicines be a duty of an entitled nurse or midwife?	Yes	883	37,8
	No*	595	25,4
	It depends on a form of employment	558	23,9
	I don't know	295	12,6
	No answer	7	0,3
4. Please indicate the criteria which a nurse or midwife will have to meet in order to be entitled to independent prescribing of particular medicines and to issue prescriptions for it.	Bachelor's degree in nursing/midwifery or a Specialist's degree in nursing and a specialist course in independent and supplementary prescribing completed	717	30,6
	Master's degree in nursing/midwifery or a Specialist's degree in nursing	224	9,6
	Master's degree in nursing/midwifery or a Specialist's degree in nursing and a specialist course in independent and supplementary prescribing completed*	1181	50,6
	I don't know	191	8,2
	No answer	25	1
5. Please indicate the criteria which a nurse or midwife will have to meet in order to be entitled to supplementary prescribing within the scope of a treatment ordered by a physician	Bachelor's degree in nursing/midwifery or a Specialist's degree in nursing	271	11,6
	Bachelor's degree in nursing/midwifery or a Specialist's degree in nursing and a specialist course in supplementary prescribing completed*	913	39
	Master's degree in nursing/midwifery and a specialist course in supplementary prescribing completed	897	38,4
	I don't know	233	10
	No answer	24	1
6. Please indicate the criteria which a nurse or midwife will have to meet in order to independently refer patients to determined diagnostic tests	Bachelor's degree in nursing/midwifery or a Specialist's degree in nursing and a specialist course in making referrals completed	828	35,4
	Bachelor's degree in nursing/midwifery or a Specialist's degree in nursing*	246	10,6
	Master's degree in nursing/midwifery or a Specialist's degree in nursing	808	34,6

	I don't know	448	19,1
	No answer	8	0,3
7. Which tests will be covered by nurses' and midwives' competence to independently make referrals in the process of diagnosis	Any tests, except for diagnostic methods which constitute an increased risk for the patient	347	14,8
	Only tests within the scope of laboratory diagnosis	299	12,8
	Only tests specified in the Regulation of the Minister of Health*	1120	48
	I don't know	564	24,1
	No answer	8	0,3
8. Will a nurse/midwife be obliged to point out the rate of patient's share in financing while prescribing a reimbursable medicinal product?	Yes, always	713	30,5
	Only if a given product has at least two rates of patient's share in financing assigned*	321	13,7
	No, the rate of patient's share in financing is specified by a pharmacist who dispenses a medicine	411	17,6
	I don't know	882	37,7
	No answer	11	0,5
9. Will nurses and midwives be entitled to prescribe free of charge medicines for those who enjoy special entitlements (disabled war and military veterans, distinguished honorary blood donors)?	Yes*	612	26,2
	Yes, but only in the case of prescriptions issued by physician's order	788	33,7
	No	113	4,8
	I don't know	815	34,9
	No answer	10	0,4
10. The list of active substances allowed in medicines independently prescribed by nurses and midwives is set forth in:	the Regulation of the Minister of Health*	1498	64,1
	the Order of the President of the National Health Fund	196	8,4
	the Polish or European Pharmacopoeia	124	5,3
	I don't know	514	22
	No answer	6	0,2

*correct answer

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Table 3. Value of differentiating capacity for questions forming knowledge rating scale

Question numer	Differentiating capacity
question 1	0,52
question 2	0,48
question 3	0,35
question 4	0,38
question 5	0,34
question 6	0,17*
question 7	0,46
question 8	0,28
question 9	0,32
question10	0,53

*value beneath expected threshold (0.20)

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Table 4. Structural indicators for particular options in questions forming knowledge rating scale

Question/ Option	Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10
1	0,13	0,10	0,38	0,31	0,12	0,36	0,15	0,31	0,26	0,64
2	0,47	0,15	0,25	0,10	0,40	0,10	0,12	0,14	0,34	0,09
3	0,06	0,60	0,25	0,51	0,38	0,35	0,49	0,17	0,04*	0,05
4	0,35	0,15	0,13	0,08	0,10	0,19	0,24	0,38	0,35	0,22

*value beneath expected threshold (0.05)

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