OPEN ACCESS Freely available online

Journal of Women's Health Care

Research Article

Evaluating Statistical Numeracy of Women Who Follow Breast Cancer Screening

Magdalini Bakola[1]*, Konstantinos K. Tsilidis[2], Haralampos V. Harissis[3]

[1]Department ofHygiene and Epidemiology, University of Ioannina School of Medicine, Ioannina, Greece; [2]Departments of Epidemiology and Biostatistics, School of Public Health, Imperial College London, London, UK; [3]Breast Unit. Surgical Department of University Hospital of Ioannina, School of Medicine, Ioannina

ABSTRACT

Objective: To assess statistical numeracy with a new specialized questionnaire in women who follow breast cancer screening programs.

Methods: A cross-sectional study of women who follow breast cancer screening in the University Hospital of Ioannina, Greece. We have created a new tool to evaluate women statistical numeracy by using 11 basic concepts, which compose the statistical numeracy spectrum and are related with breast cancer screening programs. Content validity and reliability tests have been performed. Our sample consisted of 202 women, who took part in the study in the form of an interview.

Results: A lack in statistical numeracy was observed, as the percentages of correct answers for the majority of the 11 concepts ranged from 6.9% to 53%. Percentages appear to be the concept that is more easily understood with correct answers equal to 53%. Visual presentation of medical information showed a significant improvement in women understanding, as 89.4% of them gave a correct answer.

Conclusions: Women who follow breast cancer screening programs face great difficulty in understanding basic medical statistical numeracy concepts. These concepts have great importance in women's informed decision making. The vast majority of women may make wrong decisions regarding screening programs due to the misconception of medical information. Visual presentation of the medical information could improve the misconception problem.

Keywords: Breast cancer screening, Statistical numeracy, Women, Women decision making, Women misconception, Informed decision making

INTRODUCTION

Breast cancer, with 2 million new cases each year, is the most frequent cancer among women and causes the greatest number of cancer-related deaths. In 2018, it was estimated that 627,000 women died from breast cancer worldwide [1]. Data from developed countries that adopted and implemented screening programs have shown reductions of breast cancer mortality rates [2]. But the effectiveness of a breast cancer screening program depends, among other parameters, on the degree of compliance that women show. This compliance depends on the acknowledgement of the benefits of the screening program as they are explained by the treating physician [3]. So, one of the most important parameters of the success of a screening program is the effective exchange of information between the physician and the patient.

Brief Review of Relevant Literature

Several studies of patients of various diseases have been performed on statistical numeracy defined as the degree to which individuals have the capacity to access, process, interpret, communicate, and act on numerical, quantitative, graphical, bio statistical and probabilistic health information needed to make effective health decisions [4-7]. Most of the information on prevention programs and treatment options includes numerical and risk-related concepts [8]. Studies have shown that the majority of the population cannot properly interpret numbers, rates, relative or absolute risk [9,10]. Thus, it has been shown that patients are making health decisions based on misconceptions from statistical figures [11-21].

However, there are no studies investigating statistical numeracy of women who follow preventative control programs for breast

***Correspondence to**: Magdalini Bakola, Department of Hygiene and Epidemiology, University of Ioannina School of Medicine, Ioannina, Greece, Tel: Tel:+306973569227; E-mail: magdoula_bakola@hotmail.com

Received: March 25, 2021; **Accepted**: April 19, 2021; **Published:** April 26, 2021

Citation: Bakola T, Tsilidis KK, Harissis HV (2021) Evaluating Statistical Numeracy of Women who follow Breast Cancer Screening. J Women's Health Care 10:526.

cancer, nor specialized questionnaires which estimate the statistical numeracy of these women.

Here, we develop and describe a new questionnaire, which measures statistical numeracy in women following breast cancer screening, and present descriptive results.

METHODOLOGY

We developed a questionnaire to assess statistical numeracy in women who follow preventive programs. The questionnaire includes four groups of questions. The first group includes questions about demographic characteristics: sex, age, place of residence, nationality, marital status, level of education, annual personal income, number of children and breastfeeding time, and family history of breast or ovarian cancer [12,22-25]. The second group of questions assessed consistency in health literacy (questions 1 to 3) [12]. The third group assessed the woman's source of information on breast cancer prevention programs and the degree of apprehension (questions 4 to 6) [3,12,26]. The fourth group of questions evaluated statistical numeracy among women who follow the preventative programs (questions 7 to 17). We evaluated the understanding of single event probability [8,13] (questions 7 and 9), conditional probability [8,13] (question 8), proportions (question 10), percentages (question 11), the capability of manipulating percentages and ratios [8,13] (questions 12 and 13), the capability of conversion of percentage to absolute number (question 14), the capability of conversion of proportion to percentage (question 15) and the understanding of incidence [8,13] (question 16), relative and absolute risk [13,14] (question 17). Finally, we introduced three questions to evaluate the importance of different ways of presenting data (questions 18, 19, 20) [11,14,26-29]. The questionnaire mainly includes multiple-choice questions but also some open-ended questions Table 1.

The study was launched in September 2017 and finished in June 2019. The sample used were the women who followed screening control programs over this period of time, at the University Hospital of Ioannina, which after having received a consent form and signed it, they filled in the questionnaire through an individual interview by a trained researcher (MB; same for all participants). The interview took place before the examination by the attending physician and the interview lasted about 7 minutes. Full anonymity was maintained and the data was used solely for the conduct of the study.

The data were descriptively analyzed using percentages, medians and ranges. The analysis was conducted with the use of software package SPSS v 23.0.

Content Validity and Reliability Test

Like all new tools, we have tested the reliability and validity (item content validity index [I-CVI], Test Retest and Interrater test) before distributing it to the final sample of women.

Concerning content validity, the questionnaire was attested by five experienced medical professionals, including two surgeons, one obstetrician, one epidemiologist and one statistician to assess whether the questionnaire is representative of all aspects of the construct. To check for Item-Content Validity we used a four-tiered scale (not relevant, somewhat relevant, quite relevant, highly relevant) to evaluate each item of the questionnaire and avoid having a neutral and ambivalent midpoint with more scales [30].

Once we completed the validation test, we performed a reliability test [31].We administered the questionnaire twice with a 20-day interval to 25 women, including 23 nurses and 2 physicians, who all who follow breast cancer screening and work at the outpatient clinics of the University Hospital of Ioannina. The Kuder Richardson index was estimated to assess the overall reliability index. Moreover, we performed a Test-Retest, which evaluates the degree up to which test scores remain unchanged when measuring a stable individual characteristic at different times and provide the ability of a measure applied twice on the same respondents to produce the same ranking on both occasions. We also studied the interrater reliability, where the main researcher (MB) interviewed 30 women who follow breast cancer screening and work in the surgical sector of the Hospital and after 20 days a second researcher (HH) interviewed the same women. The participants used to test the reliability were not included in the final analytical sample of the study [32,33].

Table 1: The capability of conversion of proportion to percentage and the understanding of incidence, relative and absolute risk. (Questions 7-17).

Question	Wrong Answer
	N (%)
Q7: Imagine throwing a dice with 6 sides, 10 times. How many times do you think a pair will appear?	188 (93,1)
Q8: Imagine being at the casino and you have a 1% chance of winning a 100$ lottery. How many people do you think can win the lottery if every day 1000 people buy a lottery?	157 (77,7)
Q9: The weather report in the region of Ioannina is that there is a 30% chance of rain. This means that:	108 (53,5)
Q10: Which of the following numbers represents the greatest risk for a woman getting Breast Cancer?	125 (61,9)
Q11: Which of the following numbers represents the greatest risk for a woman getting breast cancer?	95 (47)
Q12: If a female X has a Risk of breast cancer 1% in 10 years, and a female Y has a double risk to get sick in 10 years, then what is the risk of female Y?	179 (88,6)
Q13: If a female X has a 1 in 100 chance to suffer from breast cancer in 10 years, and female Y has a double chance compared to female X, what is the probability for female Y?	181 (89,6)
Q14: If the chance for a woman getting breast cancer is 10%, how many women are expected to get sick out of 100?	110 (54,5)
Q15: Consider that the probability for a woman to get breast cancer is 20 out of 100. This corresponds to the percentage of:	140 (69,3)
Q16: Consider that the probability for a woman to get breast cancer is 0,005. To 1000 women how many are expected to get sick?	115 (56,9)
Q17: In a medical study, regular preventative mammography reduces the risk of death from breast cancer by 20%. This number expresses:	187 (92,6)

Question	Answer
1) Age at first mammography:	.....
2) How often do you take a mammogram:	a) whenever the doctor tells me b) whenever I can c) I have not done it again
3) Have you ever been diagnosed with problems in the breast?	a) benign tumor b) malignancy c) atypia with hyperplasia
5) How you would describe the information you receive from the medical personnel about the prevention procedures:	a) I do not understand anything that they tell me and I do not know what to do b) I do not understand anything they say to me, but I will do what they tell me, c) I understand them completely
6) How would you describe the information you read from internet-magazines, about the prevention procedures, would you say that:	a) I do not understand what I read and do not know what to do b) I understand what I read and it helps me a lot in deciding what to do c) they leave me indifferent; I only listen to my doctor
7) Imagine throwing a dice with 6 sides, 10 times. How many times do you think a pair will appear? Which of the following answers seems most likely to you?	a) once out of 10 b) 3 times out of 10 c) 5 times out of 10 d) all the above is possible*** e) I do not know
8) Imagine being at the casino and you have a 1% chance of winning a lottery. How many people do you think can win the lottery if every day 1000 people buy a lottery?	a) 1 out of a thousand b) 10 out of one thousand*** c) 100 out of one thousand d) all the above e) I do not know
9) The weather forecast for Ioannina is that there is a 30% chance of rain. This means that:	a) there is a 30% chance that it rains and 70% that it does not rain*** b) it will rain in 30% of the prefecture of Ioannina c) it will rain 30% of the hours of the day d) all the above e) I do not know
10) Which of the following numbers represents the greatest risk for a woman getting breast cancer?	a) 1 in 1000 b) 1 in 10*** c) 1 in 100 d) I do not know
11) Which of the following numbers represents the greatest risk for a woman getting breast cancer?	a) 0,1% b) 10%*** c) 1% d) I do not know
12) If a woman X has a risk of breast cancer 1% in 10 years, and a woman Y has a double risk to get breast cancer in 10 years, then what is the risk of woman Y?	a) 2 % *** b) 5% c) 10%
13) If a woman X has a 1 in 100 chance to get breast cancer in 10 years, and a woman Y has a double chance compared to woman X, what is the probability for woman Y?	.....[2]. .. in 100
14) If the chance for a woman getting breast cancer is 10%, how many women are expected to get sick:	a) Out of 100? ..... [10]..... b) Out of 1000; ..... [100]...
15) Consider that the probability for a woman to get breast cancer is 20 out of 100. This corresponds to the percentage of:	a) 2 % b) 20%*** c) 10% d) I do not know
16) Consider that the probability for a female to get breast cancer is 0.005. Of 1,000 women how many are expected to get sick?	....[5].....

17) According to a study, mammography reduces the risk of death from breast cancer by 20%. This number expresses	a) a reduction in the relevant risk *** b) reduction of absolute risk c) reduction of both risks d) I do not know
18) What does a "great risk" of breast cancer in the next 10 years means to you?	a) ≥10 / 100 b) ≥ 30/100 c) ≥ 60/100 d) other ....
19) Imagine that the bold and underlined circles in the figure below represent the risk of you getting breast cancer over the next 10 years and the rest of circles the probability of not get it; do you thing that this represents a great or a small risk?	Answer...
20) Information related to the course of the disease and prevention procedures includes numbers, probabilities and percentages. Do you think that if there was a simpler way of presenting the information, you would be able to make a clear decision on what you have to do with your health?	a) yes b) no
Numbers in brackets and ***denote the correct answer.	

RESULTS

The study sample comprised of 202 women, who fully answered the questionnaire. Only 2 women refused to participate in the study for unknown reasons. The mean age of the women was 56.1 years with a standard deviation equal to 11.4 years. The majority of the women, almost 175 (86.6%), were married and 170 (84.6%) were living with their husbands. A large number of them (32.8%) were primary school graduates. The majority of the women, 119 (59.2%), were currently employed, and their monthly income was between 500 and 900 Euros for 105 (57.1%) of them. 91% (184) of the participants had children. 70.2% (142) of the women had no close relative that has been diagnosed with breast cancer. A total of 145 women (73.2%) have a mammography only when their physician suggests them to, while 33 (16.2%) women responded "whenever I can" to the same question. 21 women (10.6%) had a mammography for the first time. A considerable number of 115 (57%) women had already been diagnosed with problems relating to breast, namely 65 (57%) women were diagnosed with benign tumor, 38 (33.3%) with malignant tumor and 12 (10.5%) with atypia.

Regarding the information about screening programs, 97 women (48%) mostly turned to their physicians when they need information relating to a mammography, or information relating to the prevention and monitoring of related disease. A total of 53 women (26.5%) turned to the internet or newspapers and magazines, while 30 women (15%) used both resources. 66 women (32.6%) claimed that they pay no attention to newspapers, magazines or the internet and they only follow their physician's instructions. A total of 98 women (50%) claimed that they fully understand the texts they read from newspapers, magazines or the internet and that they find them rather helpful as to what they should be doing. However, 34 women (17.2%) find these texts confusing and unhelpful. Finally, 21 women (10.5%) look for information from their relatives or friends. 180 (89%) participants claimed that they fully understand the information that the doctors offer them, whereas 15 (7.4%) women claimed exactly the opposite. Seven women claimed that they do not understand and added that they do not know how to act in order to help themselves.

Concerning the fourth group of questions (7 to 17 question), which evaluates statistical numeracy among women who follow the preventative programs, the answers have shown than only 14 (6.9%) women answered correctly the single event probability (question 7 and 9) represented by the dice and 108 (53.5%) answered wrongly the weather forecast. The proportion of women who chose correctly on the item regarding the understanding of proportions was 38.1% (77), whereas percentages appear to be the concept that is more easily understood with a percentage of correct answers equal to 53% (107), which is the highest observed among all questions. The percentage of correct answers equals 22.3% (45) for the item that concerns conditional probability and 43.1% (87) for the item that concerns incidence. Converting percentages to numbers is correctly understood by 45.5% (92) of women, and converting proportions to numbers is correctly understood by 30.7% (62) of women. Finally, the majority of women, 187 (92.6%), gave the wrong answer about relative and absolute risk.

Moreover, regarding the questions 18, 19 and 20 that were designed for evaluating the importance of different ways of presenting data, results showed that 157 women (77.7%) apprehended a probability ≥10/100 as "great risk" for developing breast cancer in the next 10 years. But after showing them a visual representation of the same probability (question 19), 177 women (89.4%) answered that it represents a "small risk". Finally, 188 women (95.9%) agreed that if there was a simpler way of presenting the information, they would be able to make a clear decision on what they have to do with their health.

Content Validity and Reliability Test

Item- level CVIs (I-CVIs) and the scale-level index (S-CVI) were calculated.All the questions that remained in the questionnaire have an I-CVI of 1.00, while two questions with I-CVI <1 were removed from the final questionnaire. A S-CVI of 0.95 was calculated.The reliability index was equal to 0,801. Test-Retest reliability shows only one different answer in the total sample of all participants of the whole questionnaire. Interrater reliability was estimated and there was absolute agreement in 7 items of the research questionnaires, and the Cohen's kappa index equaled absolute 1 in the remaining, which means perfect agreement between the raters.

DISCUSSION

Statement of Principal Findings

Our results showed a high degree of statistical innumeracyamong women who follow breast cancer screening programs. Only 22.3% of the women understood correctly the concept of conditional probability. Understanding single event probabilities was also difficult since only 6.9% of the women answered correctly the first relevant question. However, this percentage was considerably higher in the second relevant question measuring single event probability and reached 46.5%. This difference could be attributed to the fact that the choice of the answer in the second question did not require any calculations at all, while in the first question it was necessary to do a few basic mathematical calculations. The question examining understanding of proportions after necessary manipulations was correctly answered in 11.4% of the cases, which is indicative of a considerable difference compared to understanding percentages. Manipulation of ratios also increases difficulty, compared to simply understanding them, as the correct answers are equal to just 10.4%. Great difficulty is met in the understanding of relative and absolute risk since only 7.4% answered correctly.

Strengths and Limitations

As it can be derived by the last 3 questions of our questionnaire, a visual presentation of medical information would be more effective and more desirable by the women. While 157 participants claim that a "great risk" is a probability greater of ≥10/100 or ≥10%, 177 consider the same percent as "small risk" when presented visually, a fact that shows the necessity of a different way of medical presentation of the information specifically in patients with statistical innumeracy.

Possible limitation of our study is that these results concern a single site study with voluntary participation and this may include risk of selection bias. Our sample derives from the women who follow breast cancer screening programs only at the University Hospital of Ioannina, which however covers and serves all the neighboring regions. Nevertheless, it is unknown whether our results generalize to other women. In Greece, statistical numeracy is rarely taught in general schools and very few informative campaigns are conducted which address the general public. We therefore expect similar results from women from other Greek regions.

Interpretation within the Context of the Wider Literature

Our results confirm the finding of previous studies, although in different populations, that statistical numeracy is insufficient even among educated women

The difficulty to understand concepts of statistical numeracy is directly related to patient choices regarding screening. For example, imagine a doctor who informs his/her patient about the benefits of mammography to reduce the risk of death from breast cancer by 20 %. If that woman could understand or interpret this number correctly, it is likely that she will be more consistent with her screening. Although our study does not measure how statistical numeracy directly affects women's health decisions, there are few studies that suggest that patient decision-making is considerably influenced by misconception and statistical innumeracy [3-5,15,19].

Implications for Policy Practice and Research

We urge medical doctors evolved in breast cancer screening programs to evaluate the statistical numeracy of their patient and rethink about the presentation of the medical information according to the statistical numeracy background of each patient. We also urge all the governmental and non-governmental organizations to conduct basic statistical numeracy courses for all patients, while medical doctors, after evaluating the statistical numeracy level of their patients, should consider visual presentation.

We plan a study to evaluate a bigger sample and estimate the factors which affect all of these concepts which compose statistical numeracy in women.

CONCLUSION

Consequently we present here the validation of our new instrument, the first questionnaire to estimate statistical numeracy in women who follow breast cancer screening programs. A value equal to 0,801 shows high reliability to measure statistical innumeracy among women of a general population through the use of this questionnaire. Test-Retest reliability was very high with only one different answer in the total sample of all participants.

Contributorship

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by MagdaliniBakola.*Konstantinos K. Tsilidis, Haralampos V. Harissis* supervise this research. The first draft of the manuscript was written by MagdaliniBakola and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethics and Other Permissions

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.The questionnaire and methodology for this study was approved by the Human Research Ethics committee of the Medical School, University of Ioannina, Greece as well as by Human Research Ethics committee of the University Hospital of Ioannina. Informed consent was obtained from all individual participants included in the study. All women signed informed consent regarding publishing their data. We are make sure that all data and materials as well as the questionnaire support their published claims and comply with field standards.

Funding

This work was supported by anyone and was no funded.

Conflict of Interests

All the authors of this study (MagdaliniBakola, Kostas K. Tsilidis and Haralampos V. Harissis) declare that they have no conflict of interest.

Acknowledgments

We would like to thank the administration of the University Hospital of Ioannina, the director of the surgical clinic for the relevant permission to prepare the study as well as all the women who follow breast cancer screening for their excellent cooperation and patience.

REFERENCES

1. https://www.who.int/cancer/prevention/diagnosis-screening/breast-

cancer/en/ 2020.

2. http://www.euro.who.int/en/health-topics/noncommunicablediseases/cancer/news/news/2012/2/early-detection-of-common-cancers/breast-cancer. 2016.
3. Gigerenzer G, Gaissmaier W, Kurz-Milcke E, Schwartz LM, Woloshin S. Helping doctors and patients make sense of health statistics. PsycholoSci Pub Int. 2007;8(2):53-96.
4. Hanoch Y, Miron-Shatz T, Rolison JJ, Omer Z, Ozanne E. Shared decision making in patients at risk of cancer: the role of domain and numeracy. Health Expectations. 2015;18(6):2799-810.
5. Galesic M, Garcia-Retamero R. Do low-numeracy people avoid shared decision making? Health Psychol. 2011;30(3):336.
6. O'Donnell J (2017) Health Literacy in Canada; a Primer for Students: Laurie Hoffman-Goetz, Lorie Donelle, and Rukhsana Ahmed: Canadian Scholars Press, Toronto, Ontario, Canada. J Cancer Educ.2014;32(2):211-212.
7. Amalraj S, Starkweather C, Nguyen C, ArashNaeim MD. Health literacy, communication, and treatment decision-making in older cancer patients.Oncology. 2009;23(4):369.
8. Lipkus IM, Samsa G, Rimer BK. General Performance on a numeracy scale among highly educated samples. Med Decision Making. 2001;21(1):37-44.
9. Harissis HV, Gizas IG, Katsios CS, Batsis HP, Lianos GD, Sarandi MR, et al.Intuition versus evidence in surgical practice. Questions and suggestions rose from an ob-servational study in medical students.
10. Rumsey DJ. Statistical literacy as a goal for introductory statistics courses. J Stat Edu. 2002;10(3).
11. Elmore JG, Gigerenzer G. Benign breast disease-the risks of communicating risk. New Eng J Med. 2005;353(3):297-279.
12. Gaissmaier W, Gigerenzer G. Statistical illiteracy undermines informed shared decision making. ZeitschriftfürEvidenz, Fortbildung und Qualität m Gesundheitswesen. 2008;102(7):411-413.
13. Gigerenzer G, Edwards A. Simple tools for understanding risks: from innumeracy to insight. BMJ.2003 ;327(7417):741-4.
14. Gigerenzer G. Breast cancer screening pamphlets mislead women. BMJ. 2014;348.
15. Black WC, NeaseJr RF, Tosteson AN. Perceptions of breast cancer risk and screening effectiveness in women younger than 50 years of age. JNCI: J Nat Canc Inst. 1995;87(10):720-731.
16. Schwartz LM, Woloshin S, Black WC, Welch HG. The role of numeracy in understanding the benefit of screening mammography. AnnInt Med. 1997;127(11):966-972.
17. 17.Woloshin S, Schwartz LM, Moncur M, Gabriel S, Tosteson AN. Assessing values for current health: Numeracy matters. J General Int Med. 2000;15:11.
18. Cokely ET, Galesic M, Schulz E, Ghazal S, Garcia-Retamero R. Measuring risk literacy: the berlin numeracy test. Judgment and Decision making. 2012.
19. Garcia-Retamero R, Andrade A, Sharit J, Ruiz JG. Is patients' numeracy related to physical and mental health?. Medical Decision Making. 2015;35(4):501-511.
20. Zomorodbakhsch B, Keinki C, Seilacher E, Huebner J. Cancer patients numeracy and preferences for information presentation—A survey among German cancer patients. J Cancer Edu. 2020;35(1):22-27.
21. Bodemer N, Meder B, Gigerenzer G. Communicating relative risk changes with baseline risk: presentation format and numeracy matter. Med Decision Making. 2014;34(5):615-626.
22. Burrill G, Camden M. Curricular Development in Statistics Education. Lund, Sweden: Int StatInstVoorburg, the Netherlands. 2004.
23. Price GR, Ansari D. Dyscalculia: Characteristics, causes, and treatments. Numeracy. 2013;6(1):1-6.
24. Schield M. Statistical Literacy Curriculum Design. IASE Roundtable Conference; Lund, Sweden. 2004.
25. Bishop A, Clements MK, Keitel-Kreidt C, Kilpatrick J, Leung FK. Second international handbook of mathematics education. Springer Sci Business Media; 2012.
26. Paling J. Strategies to help patients understand risks. BMJ. 2003;327(7417):745-8.
27. Smith SG, Wolf MS, Wagner CV. Socioeconomic status, statistical confidence, and patient–provider communication: An analysis of the Health Information National Trends Survey (HINTS 2007). j Health Communication. 2010;15:169-185.
28. McDowell M, Rebitschek FG, Gigerenzer G, Wegwarth O. A simple tool for communicating the benefits and harms of health interventions: a guide for creating a fact box. MDM Policy & Practice. 2016 ;1(1).
29. Wittink H, Oosterhaven J. Patient education and health literacy. MusculoskelSci Practice. 2018 ;38:120-127.
30. Polit DF, Beck CT. The content validity index: are you sure you know what's being reported? Critique and recommendations.Res Nurs Health. 2006;29(5):489-497.
31. Berchtold A. Test–retest: agreement or reliability? Methodological Innovations. 2016 ;9:2059799116672875.
32. Michalos AC, editor. Encyclopedia of quality of life and well-being research. Dordrecht: Springer Netherlands; 2014.
33. McHugh ML. Interrater reliability: the kappa statistic. Biochemia Med. 2012;22(3):276-282.