Original Article

A Virtual Instructional Design Improved Breaking Bad News in Obstetrics and Gynecology Residents

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Abstract

Objective: Breaking bad news to the patient is challenging, especially for the physicians and the residents, due to the lack of structured and practical training. This study aimed to design and evaluate a novel virtual instructional design for improving obstetrics and gynecology (Ob/Gyn) residents breaking bad news skills.

Materials and methods: Virtual instructional design was performed based on the ADDIE model (Analysis, Design, Development, Implementation and Evaluation) from September 2020 to July 2021 at the Department of Ob/Gyn, a referral hospital affiliated with Tehran University of Medical Sciences, Tehran. Iran. The five steps of ADDIE virtual instructional design were applied sequentially.

Results: Totally 33 of the Ob/Gyn residents included in the study that 77% needed specific training. The awareness of the performance of the residents in seven areas including interview context, strategy, planning, professionalism, empathy, knowledge, and receiving information needed to be trained for breaking bad news. The content of the virtual training package was designed based on the prior assessment needs in four multimedia lectures of professors, one short educational video, a 65-page file that combines text and images in 4 parts. The pre-test and post-test mean scores (SD) were 9.45 (2.0) and 10.67 (1.7), respectively (p-value≤0.001) in the cognitive and attitudinal domain. In the final step, the final corrections were made in the virtual training package. Interestingly, the satisfaction of residents' attitudes was 96.5%.

Conclusion: Most Ob/Gyn residents do not have the necessary perception and skills to deliver bad news to the patients. Designing an appropriate virtual training package for improving communication skills is associated with satisfaction. Thus, the efficacy of the training program should be implemented for all Ob/Gyn residents.

Keywords: Instructional Design; Breaking Bad News; Obstetrics; Gynecology; Residents; Communication

Introduction

Communication with patients is essential for all physicians (1). Medical education has only relied on clinical skills and ignored practical communication skills (2). It should be considered that the Accreditation Council for Graduate Medical Education (ACGME) highlights "interpersonal and

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communication skills" as one of the core competencies expected in the training of specialized courses (3). Some special clinical situations make communication with the patient difficult in medicine and require advanced skills in communication. One of these special communication skills is the breaking bad news by the physicians to the patient (4). The nature of bad news is any news that immensely and negatively changes the patient's view of their future (5). In the specialized field of obstetrics and gynecology, the residents typically need to break bad news in the three domains of prenatal, infertility, and gynecological oncology (6-9). The residents should deliver much bad news, including the announcement of fetal death, an anomaly in ultrasound, chromosomal abnormalities in amniocentesis test, or the termination of the fetus's life due to life-threatening disease to prenatal patients (6).

In infertility, the announcement of the fertility impossibility, a re-abortion, or the failure of artificial insemination has been considered bad news for a couple who has not had a child after many years of married life despite the family's desire (7, 8). The residents have faced bad news due to the treatment of incurable patients in gynecologic oncology. Much bad news, such as receiving a surgical pathology report with the cancer diagnosis to inform the patient, the need for chemotherapy and/or radiation therapy, the recurrence of cancer, the lack of treatment and the only palliative care may impact one’s expectations for the future (9).

The lack of proper training by the residents for breaking bad news may lead to negative consequences for themselves and their patients (10). It has had adverse and significant effects on the physical, psychological, social, and economic dimensions of health care. The residents may encounter uncertainly in delivering bad news due to the potential consequences such as their own psychology's state in the face of bad news, the possibility of severe emotional reactions from patients, or even the fear of being blamed (11). Therefore, proper education may improve their confidence and competence to decrease stress and give more satisfaction to their patients (12).

In this way, the patient can cope better with accepting her disease for getting an appropriate treatment (8). Although many residents feel that the experiences may improve their ability to break bad news over time, this is a complex skill that they must learn with an appropriate education. (13). Far too little attention has been paid to the importance of formal training for Ob/Gyn residents who are frequently faced with this situation. Since an Ob/Gyn department needs to have a program to close the gap between the curriculum and training of Ob/Gyn residents, a virtual instructional design was done to empower Ob/Gyn residents. The residents were able to use a proper virtual training package to achieve a successful result for breaking bad news to the patient without physical presence at the department for 24 hours per day.

Materials and methods

Subjects and setting: This observational cohort study included an educational intervention consisting of a training course that designed e-learning based on the ADDIE model to break bad news for Ob/Gyn residents. Sampling was done by the counting method. The study population consisted of 36 Ob/Gyn residents from Vali-E-Asr Hospital affiliated with Tehran University of Medical Sciences from September 2020 to July 2021. Thirty-three (91.6%) people participated in the tests (three did not answer), and 29 (80.5%) people completed a satisfaction questionnaire.

This study was confirmed by the Ethics Committee of Biomedical Research, Virtual School of Medical Education and Management of Shahid Beheshti University of Medical Sciences by reference number IR.SBMU.SME.REC.1399.060. All participants had signed the informed consent. The research project began after the ethical board approved the study. We then set up an electronic meeting among the residents to introduce the purpose and procedures of this research. The participants' mean (SD) age was 30.31 (3.5) years. The residents were women at four levels. Although they signed the electronic consent forms to participate in the study, they were free to leave the study.

The five steps of ADDIE virtual instructional design were performed sequentially, including analysis, design, development, implementation and evaluation.

Inclusion and Exclusion criteria: The inclusion criteria were all obstetrics and gynecology residents in the academic year 2020-2021 in Imam Khomeini Hospital who consented to participate in the study. The exclusion criteria were the residents who did not wish to be in research, and they could leave the experimental groups at any time. Moreover, the rotation residents from the other hospitals were excluded from the study.

Analysis: The first step of the analysis was two electronic questionnaires used for the needs assessment, namely the demographic information questionnaire-residents' characteristics and the SPIKES questionnaire supported the six SPIKES-components of breaking bad news that Its validity and reliability in Iran were confirmed by Farokh Yar in 2012 (14). It consisting of the problems of knowledge and the attitude of obstetrics and gynecology residents in breaking bad news.

The data were collected from the personal characteristics, learning needs, and existing limitations, such as the resident's shortage of time and the lack of a suitable private place for breaking bad news. The first section included an individual profile. The questionnaire had eight questions, including the level of the residents, age, marital status, duration of work experience after graduation, fear of announcing bad news to the patient, participated in similar workshops previously, a history of a severe illness about themselves or those they love, the amount of time that they spend communicating bad news to the patient was gathered either. The second section SPIKES questionnaire, were included 16 five-choice questions; Options include "always, often, sometimes, rarely, never"; Which measures the awareness of the performance of the residents in breaking bad news in seven areas including interview context, strategy, planning, professionalism, empathy, knowledge, and receiving information. The criterion of no educational need was set at 70% or more. The total score was also used for the needs assessment questions; in such a way that in all questions, the options were scored. The correct answer received a score of 1, so the option always had a score of 1, often a score of 2, sometimes a score of 3, rarely a score of 4, and never a score of 5 in all questions; Except for the question "I tell the patient the news on the phone" which always got a score of 5, often a score of 4, sometimes a score of 3, rarely a score of 2 and never a score of 1. If a person answered all the questions correctly, the total score was 16, and if she answered all the questions incorrectly, her total score was 80. The head of the Department of Ob/Gyn affiliated with Tehran University of Medical Sciences also announced the need to implement this instructional design.

Design: The topics were identified, the cognitive goals and the attitudes were set, and the self-assessment questions were used to evaluate the objective achievement.

Following the need assessment of targeted learners, we set out to achieve our general and objective goal of creating a course to improve delivering bad news. The results were prioritized based on the identified educational needs and organized by the first three steps of Bloom's taxonomy (knowledge, comprehension, application) in two domains of cognitive and affective step by step (15). This model involved an instructional analysis in designing the course layout to achieve the educational goals. Prioritizing and arranging plans rational, thematically and from whole to part (in a goal from part to whole) and self-assessment questions were used to evaluate the achievement of objectives. Gagne strategy (16) was used for educational strategy, and in some cases, the expository method (17) was used for a deep understanding of residents. The educational content in four topics with the following titles: bad news, why it is difficult to break bad news, how we can better break bad news, cases and scenarios of bad news were prepared in the field of obstetrics and gynecology. Cognitive and attitudinal objectives were determined under the needs assessment performed at the beginning of each topic. The Syllabus of the course are shown in Figure 1.

Due to the busy schedule of Ob/Gyn residents, virtual and interactive training were used for the learning platform.

Development: In the third step, the virtual educational materials were determined based on the needs assessment and reviewing the previous related studies and consulting with the experts. For easier access for residents, the contents were prepared as virtual training package multimedia, PDF text, educational slides and videos.

The Virtual-training package included four multimedia lectures by professors (82 minutes), one short educational video presenting bad news to the patient (8 minutes) and a 65-page file that combines text and images in 4 parts.

The educational objectives were defined at the beginning of each part. At the end of each part, the questions were asked about the mentioned objectives to evaluate the written goals. All questions were answered correctly at the end of the training package.

The package was sent to experts, and 4 Ob/Gyn residents were corrected from another hospital, whose comments and opinions.

Also, the professors presented an online virtual workshop in 120 minutes in the virtual hall of the Ob/Gyn Department for more interaction between the residents.

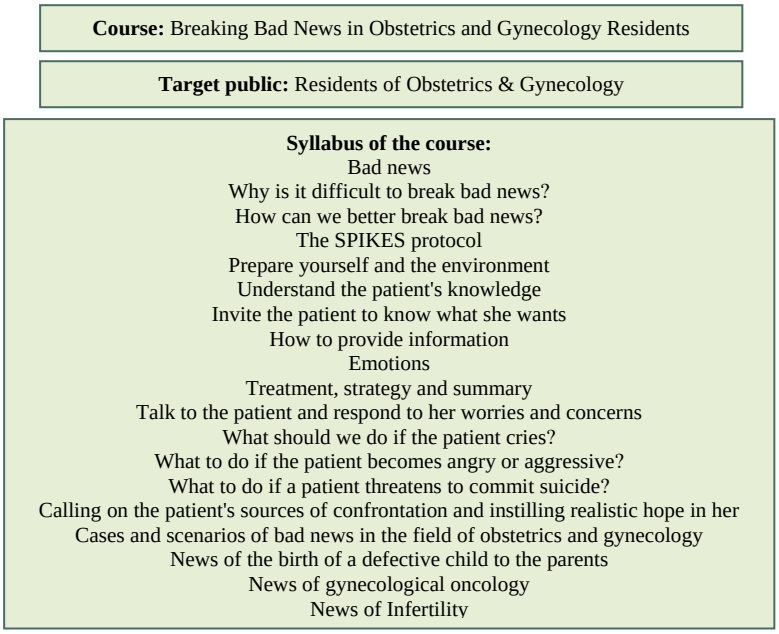

Figure 1: The contents of the course

To encourage and involve more, scenarios were presented in this field. A resident answered each scenario. Then, the responses were reviewed by the professors. The other residents learned the critical points for breaking bad news to the patient better.

In addition, a learners' guide was prepared, which included how to use the content of the virtual educational package content, which specified the order of multimedia files and a short film, as well as the use of a text file.

Implementation: In the fourth step of implementation, the virtual training package was available to the residents in the virtual system of the Ob/Gyn group. After four days, the online interactive workshop was presented to support the virtual application with the following sections: an introduction for reviewing guidelines and prereading (40 min), address questions (20 min), giving scenarios and debriefing (40 min) and an additional discussion (20 min).

Evaluation: An electronic pre-test consisting of 15 questions were taken before presenting the training package to the residents. The training package was accessed to them for four days. Then, they participated in the online interactive workshop. After a week, they completed an electronic post-test for the final evaluation to determine if they had achieved the course outcomes. The next day, the link to the correct answers and feedback was provided to the residents.

Also, the researchers made a satisfaction questionnaire consisted ten questions in four ranges from poor to excellent, which should be completed by the residents. Finally, based on the information obtained and the opinions of the professors, corrections were made in the training package.

Statistical analysis: Descriptive statistics, including means (SD) and percentages, were used to analyze the data. For quantitative variables, Student's t-test or Mann-Whitney U test was used in compliance with their applicability conditions. After collecting the data, the analysis was done with SPSS version 26. A P-value of less than 0.05 was considered significant.

This study was confirmed by the Ethics Committee of Biomedical Research, Virtual School of Medical Education and Management of Shahid Beheshti University of Medical Sciences by reference number IR.SBMU.SME.REC.1399.060. All participants had signed the informed consent. All the methods, including data collection and analysis, were carried out following relevant guidelines, ethical practices, and regulations.

Results

Participant characteristics: A total of 33 residents were recruited for the study. All participants were women. The mean (SD) age was 30.31(3.5), in 26 to 44 years.

The shortest time was two minutes to break the bad news, and the maximum time was 20 minutes. The mean (SD) time was 9.45 (5.6) min. There was no correlation between age and the total score (p = 0.166). Also, there was no correlation between the time of breaking the bad news and the total score (p = 0.212)

Eighteen (54.5%) residents were single, and 15 (45.5%) were married. In the first step for determining the educational needs, a score of less than 70% was the criterion of educational needs. The results of the needs assessment test showed that the total level of knowledge of assistants was 23%, and they had not achieved the desired level (highest score per question below 70%). Thus, the awareness of the performance of the assistants in seven areas, including interview context, strategy, planning, professionalism, empathy, knowledge, and receiving the information needed to be trained for breaking bad news. The total score was also used for the needs assessment questions; in such a way that in all questions, the options were scored.

Based on this, the average total score was 38.22 for all the assistants. According to the findings, the mean of the total scores of the SPIKES questionnaire with the characteristics of residents did not show a significant relationship. The comparison of the SPIKES questionnaire's total score and the residents' characteristics are listed in Table 1.

The results of the residents based on SPIKES criteria are listed in Table 2.

Based on the results of the first step, the content of the training package was equally considered for the obstetrics and gynecological residents of any age, work experience and other characteristics. In the second step. Needs prioritization and general goals were determined in four topics including: bad news, why it is difficult to break bad news, how we can better break bad news, cases and scenarios of bad news were prepared in the field of obstetrics and gynecology. Also cognitive and attitudinal goals were identified in each of them.

In the third step, the results of the previous two steps efforts caused the Gagne strategy to be selected in the tutorial section of the virtual educational content with the explanation and deep understanding of learners; the integration strategy was used in content organization. The virtual training package was prepared and compiled by referring to the latest books, articles and searching internet sites in four multimedia lectures of professors, a short educational video, a 65-page text file and four sections. At the beginning of each section, according to the presented materials, a picture was placed for display, then the educational objectives were defined, and at the end of each section, the questions were asked about the mentioned objectives to obtain an evaluation of the codified objectives. And finally, all the questions were answered in the end.

Table 1: The comparison of the total score of the SPIKES questionnaire and the characteristics of the residents

Personal characteristics	Frequency (%)	Score total Mean (SD)	P-value
Level			0.451
1	27.8	37.56 (9.62)	
2	22.2	35.14 (5.55)	
3	25	40.71 (6.63)	
4	25	39.33 (5.41)	
Marital status			0.373
Married	45.5	38.13 (6.52)	
Single	54.5	38.29 (7.71)	
Clinical experience (year)			0.538
<5	90.9	37.89 (7.05)	
≥5	9.1	41.33 (7.76)	
Are you afraid of breaking bad news to the patient?			0.254
Yes	42.4	39.85 (8.97)	
No	57.6	36.94 (5.04)	
Have you ever had a workshop or course for breaking bad news to a patient?			0.865
Yes	21.2	39.16 (7.44)	
No	78.8	38 (7.11)	
Do you have a severe illness about yourself or your loved ones?			0.3
Yes	66.7	39.43 (6.54)	
No	33.3	35.90 (7.76)	

Table 2: Distribution of frequency of answers to the SPIKES questionnaire

Area	Questions	Always	Often	Sometime	Rarely	Never
Interview bed	Ensure that the meeting with the patient to give bad news is done in private	15.2	63.6	15.2	6.1	0
	Pick a time to give bad news that is most convenient for the patient and her family	3.0	36.4	45.5	9.1	6.1
	Sit in a chair next to the patient rather than behind your desk when giving bad news	9.1	33.3	30.3	24.2	3.0
Strategy and strategy determination	Wear a white lab coat when giving bad news	69.7	21.2	9.1	0	0
	Refer the patient to a cancer support group after giving bad news to the patient	42.4	21.2	15.2	18.2	3.0
Planning	Ask your receptionist to hold all phone calls when giving bad news to a patient	18.2	33.3	27.3	12.1	9.1
	Turn off your beeper (or ask someone to hold it) when giving bad news to a patient	24.2	24.2	18.2	24.2	9.1
Professionalism	Give bad news to a patient by telephone	0	0	0	48.5	51.5
Sympathy	Touch a patient on the hand or arm when giving bad news	6.1	21.2	24.2	42.4	6.1
	Ensure there is some kind of hope conveyed to patients when giving bad news	21.2	51.5	21.2	6.1	0
Knowledge	Give an indication that things are serious before giving details about bad news	40.6	53.1	0	6.3	0
	Start giving bad news by first assassing the patient's understanding of her condition	31.3	43.8	21.9	3.1	0
	Give specific statistics to patients about survival of life-threatening illnesses	9.4	53.1	25.0	12.5	0
	Give a definite amount of time of survival when giving bad news if the patient asks	0	15.6	31.3	37.5	15.6
Receive information	Find out how much the patient wants to know before giving bad news	15.6	37.5	34.4	12.5	0
	Encourage the patient to express her feelings when giving bad news	9.4	40.6	37.5	9.4	3.1

In step four, the results indicated that the pre-test's mean scores in the cognitive and attitudinal domains were 9.45 (63%). Interestingly, after using the virtual training package in the post-test, the average score was 10.67 (71.13%), which was significantly different ($p \leq 0.001$), indicating the effective effect of the training design. Given that awareness of breaking bad news is necessary for the assistants, our data showed more emphasis and necessity on the training design and preparation of educational content.

In step five, the final corrections were made in the virtual training package through the valuable comments of the professors. Also, the results of residents' satisfaction with the virtual training package of the breaking bad news were 96.5%. (Excellent and good), indicating that they feel they should learn and increase their awareness in this field. Residents' satisfaction is summarized in Table 3.

Table 3: Descriptive answers to the questions of the satisfaction questionnaire by the residents

Satisfaction questions	Excellent	Good	Medium	Poor
The educational content provided was up to date.	48.3	51.7	0	0
Combined techniques including textual content, videos, slides, and lectures were used in learning.	58.6	34.5	6.9	0
The explanation was clear and expressive.	75.9	17.2	6.9	0
Learning was practical and needed.	69	27.6	3.4	0
In the workshop, the professors attracted the participation of the residents.	55.2	41.4	3.4	0
Pre-test and post-test evaluations were in line with educational goals.	62.1	34.5	3.4	0
The professors motivated the residents to learn how to break bad news.	65.5	27.6	6.9	0
There was planning and order in the execution of the virtual program.	62.1	37.9	0	0
What is your satisfaction with the training guide provided in general?	69	31	0	0
Do you like the performance of this training course virtually?	69	27.6	3.4	0
Total	63.45	33.10	3.49	0

Discussion

In this study, we set up a new method to educate the OB/Gyn residents to break bad news by using a well-established model that aided in the organization of content and designing a learner-centered resource. Moreover, the preliminary evaluation revealed that residents were satisfied with the resource and felt it helped them learn to deliver bad news to the patients. For those who may consider developing such resources, this paper demonstrates the value of using well-established educational theories and design principles to guide the process. With this in mind, the resource created may be suitable for use in course residency.

The interactive learning method moves residents from passive learning toward more active learning methods, which have been shown to increase students' performance and give them autonomy over their education (18).

One of the fundamental reasons the residents have difficulty breaking bad news to the patient is the lack of the knowledge to present bad news to the patient and not knowing what might happen. The residents need to be taught scientific methods in this regard to deliver bad news to the patient and her relative.

So far, no educational design has been done to break bad news for obstetric and gynecological residents, and according to the educational needs of the obstetrics and Gynecology ward. This design has been done bridge the existing gap. Designing a virtual training package emphasising Gagen and integration strategy, using photos, educational videos and lecture multimedia and online interactive virtual workshop, has been tried in this research. Appropriate educational design should be done to empower the target group, obstetricians and gynecologists, and thus take an essential step in improving the community's health.

Limitations: This study had a relatively small sample size and was performed only in one university hospital. A virtual program was provided so that Ob/Gyn residents could use it at any opportunity. Still, there was no performance guarantee, and residents in cyberspace listened to the content thoroughly.

Suggestions: It is suggested to increase the knowledge, attitude and skills of obstetricians and the residents in breaking bad news to the patient, and the above educational design should be used in other universities. Also, establishing a continuous evaluation network for university interpersonal communication skills seems mandatory to provide a suitable platform for communication with patients in educational and medical centers.

Conclusion

Our findings represent most Ob/Gyn residents do not have the necessary skills to deliver bad news to the patients, and designing an appropriate virtual training package for improving communication skills in this area is associated with satisfaction.

Conflict of Interests

Authors have no conflict of interests.

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