Written Health Education Materials for Women with Gestational Diabetes Mellitus – Evaluation of Usefulness and Patients’ Satisfaction

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Background: Written health educational materials are an integral part of the treatment process. Because of the constantly increasing gestational diabetes mellitus (GDM) global rate, pregnant women require accessible, easy-to-understand and evidence-based medical information about this pregnancy complication.

Aim: To adapt and elaborate printed educational materials on GDM and to evaluate the usefulness of the produced training materials and pregnant women’s satisfaction.

Materials and methods: The present study implemented a methodological approach covering three phases: (1) systematic literature review; (2) compilation of printed educational materials for pregnant women with GDM; (3) evaluation of the usefulness and satisfaction with the produced educational materials through a focus group consisting of pregnant women. A seven-item self-administered feedback questionnaire was adopted for evaluation of patient satisfaction after the use of educational materials.

Results: An educational manual was developed in compliance with the main requirements for effectiveness of educational materials referring to content, structure, language, layout and illustrations. The usefulness of the educational manual and patient satisfaction were evaluated by a sample group of 20 women with GDM. Approximately 95% agreed or strongly agreed that the information in the educational manual was useful. The patients’ assessment of the understanding and readability of the written materials showed a satisfaction rate of 85%. The overall assessment for the educational materials was very high - excellent (65%), very good (30%) and good (5%).

Conclusion: The provision of educational materials on GDM can enhance pregnant women’s health literacy as well as their responsibility, motivation and attitude to their personal health.

BACKGROUND

Medical terms and wording are often complicated and unintelligible for the patients. Easily accessed and understandable health information can play a decisive role in patient’s compliance with drug treatment.¹ ²

Education has become an integral part of the care for patients’ health. In the educational process health care providers can assist their patients in acquiring new knowledge and skills, in detecting and correcting their mistakes. The aim is to stimulate the patients’ active involvement in the therapeutic process. Some studies have demonstrated that written educational materials are most effective and easily accessible for the patients.³

Verbal communication is significant for the educational process but on its own account it is not sufficient. The availability of printed educational...
materials combined with health care providers’ advice makes patients’ education more effective.4

Although pregnancy is a physiological state it is also a stress test — numerous changes in the hormonal levels and in the metabolic processes course in the female body are observed.5 Gestational diabetes mellitus (GDM) is a frequently encountered health problem among pregnant women.6 Although it is a temporary condition, usually vanishing after delivery its occurrence presents a risk for affected women to develop type 2 diabetes mellitus (T2DM) in the future.7 A study conducted in Bulgaria between 2009 and 2011 among high-risk group of pregnant women showed a prevalence of GDM from 10.8% to 31.6% depending on the diagnostic criteria.8

A diagnosis of GDM can be rather frightening for pregnant women and they usually need some time to adapt. Numerous studies on pregnant women’s knowledge about GDM have outlined certain lapses.9-13 They have all confirmed that women with diagnosed GDM needed such information and adequate education on the treatment, control, possible complications and further T2DM prevention. Education is a warrant for the future. It enables the woman with diabetes to perceive her place and role in the treatment process.

Nowadays, the majority of pregnant women use Internet as an easily accessible source of health and drug information.14,15 The use of Internet only, as a main source of information about pregnancy, though, has its risks and difficulties.

The compilation of printed educational materials for pregnant women can significantly enhance their knowledge of GDM, dietary habits, physical activity, self-monitoring of blood glucose, and prevention of further complications.

AIM

The aim of the study was to adapt and elaborate printed educational materials on GDM and to evaluate the usefulness of the produced training materials and pregnant women’s satisfaction.

MATERIALS AND METHODS

The present study implemented a methodological approach incorporating three phases:
(1) systematic review of the literature;
(2) elaboration of printed educational materials for pregnant women with GDM;
(3) evaluation of the usefulness and satisfaction with the elaborated educational materials through a focus group consisting of pregnant women with GDM;

LITERATURE REVIEW

Scientific articles published from 1996 to 2017 were reviewed for identification of available printed educational materials for patients and the specific requirements they should meet. The following databases were explored: PubMed, Embase, Science Direct, Cochrane Library and Google Scholar for key words and phrases: ‘patient education materials’, ‘pregnancy education booklet’ and ‘gestational diabetes education’. A total of 7 relevant publications were identified associated with elaboration, validation and testing of educational materials for patients, including pregnant women.1,16-21

The analyzed literature data revealed that, in spite of the selected format, the educational materials should be:

• Easily understandable – written in a language that was clear and accessible for the patient;
• Visually attractive – the text must be adequately illustrated, containing figures, schemes and tables;
• Evidence-based – the cited health information had to be up-to-date, reliable, and listing only well-known trustful sources;

The elaborated educational materials must comply with certain technical requirements such as font size, underlining of key words and phrases, background etc.

STUDY TOOLS

Written health education materials for women with GDM

The main study tools were the educational materials produced during the second phase of our research.22 They presented comprehensive information about GDM, its management as well as places where women could get additional support. The health information incorporated in the educational materials was of general nature, its wording was understandable, completed with the necessary tables, schemes and images for better visualization and it did not aim to substitute the consultations with physicians and/or pharmacists.22

Feedback questionnaire

A feedback questionnaire was created for the purpose of the study. It comprised seven questions. The first two questions concerned the respondents’ socio-demographic characteristics. The following two questions used a 5-point Likert scale as a measuring instrument. The scale varied from ‘1 – strongly
unsatisfied’ to ‘5 – strongly satisfied’ for evaluation of the statements included in question 3 and from ‘1 – strongly disagree’ to ‘5 – strongly agree’ for question 4. Questions 5 and 6 were of closed type with permitted option of only one answer. The last question of the evaluation sheet was of open type and envisaged a possibility for the respondents to express their written comments and recommendations for the provided educational materials. Verbal and written informed consent were obtained from all study participants. Data collection was conducted from October to November of 2017.

STATISTICAL ANALYSIS
The data were statistically analyzed using MS Office Excel for Windows 10 and SPSS software v. 17.0. Descriptive analysis was applied to the participants’ characteristics and outcomes. The results were presented as frequencies and percentages.

RESULTS
ELABORATION OF PRINTED EDUCATIONAL MATERIALS FOR PREGNANT WOMEN WITH GDM
When developing the educational materials based on the literature review and having in mind that women with GDM experienced this medical condition for the first time, we decided to outline the following issues:
• Information on GDM - definition, risk factors, diagnostic criteria and importance of treatment..
• Options for treatment and successful control of GDM.
• Recommendations for healthy and balanced nutrition during pregnancy and advice on moderate physical activity.
• Self-monitoring of blood glucose at GDM – importance and significance, steps for its realization, target values for successful control.
• Hypo- and hyperglycemia – symptoms, preventive options, containment methods.
• Insulin treatment – role of insulin in the human body, different types of insulin, tips for injecting insulin.
• Sources of additional information and support – health experts, Internet and mobile applications.

The recommendations to pregnant women listed in the educational manual complied with the recommendations of Bulgarian, European and global guidelines on diabetes management.

The final version of the manual is 148 x 210 mm (A5), font Calibri 14 pt and consists of 53 colour and 3 black-and-white pages. The educational manual contains 9 figures and 6 tables, and some illustrations. The information is presented in 18 chapters, the first one entitled Introduction and the last one – References.

EVALUATION OF USEFULNESS AND PATIENTS’ SATISFACTION
In order to assess whether the elaborated educational manual was useful to the patients we conducted a questionnaire study among a focus group of 20 pregnant women with GDM, part of the manual target auditory. Each pregnant woman had one month to get acquainted with the information listed in it. After that each woman completed a feedback questionnaire reflecting the satisfaction with and usefulness of the supplied educational manual.

Table 1 lists the compiled results of the respondents’ socio-demographic data. The respondents’ age varied from 18 to 38 years (mean age 28.65±4.9). The prevailing part of the focus group women had University education (55%), followed by those with secondary school grade (40%) and one woman with primary education (5%). Those data fully correlated with the female group – target of the manual – adult literate women in fertile age.

Table 2 and Table 3 present the results associated with the evaluation of satisfaction and usefulness of the manual supplied to the interrogated women.

A very high extent of satisfaction was achieved among the women after acquainting with the information provided in the educational materials. The direct evaluation of the five constructing components – content, understandability, design, illustrations, readability of the text - did not contain answers 1 - ‘strongly unsatisfied’ and 2 - ‘rather unsatisfied’. The same response trend was observed referring to the usefulness as presented in Table 3.

The respondents were categorical in regard to the volume and content of the educational manual and all of them qualified it as ‘sufficient’.

The overall estimate given by the respondents to
the presented educational materials was extremely high – 65% marked ‘excellent’, 30% - ‘very good’ and 5% - ‘good’ (Fig. 1).

Twelve respondents have shared feedback containing recommendations and impressions about the presented educational materials. Concerning their impressions, the inquired women shared that the manual was useful to them because of its plain language, interesting facts associated with diabetes, relevant information about the diet and various foods. Several of them considered the manual ‘a valuable assistant’ during pregnancy to them and to their family as well. The shared recommendations were associated with the necessity to provide access to information about GDM to more pregnant women.

DISCUSSION

The printed educational materials containing health information should be easily understandable, written in plain language and well structured so that they could convey correctly their message to the patient. When elaborating printed educational materials, it is necessary to bear into consideration the readability level of the texts as well as their graphic and design layout in order to provide better understanding by the patients. The illustrations must

| Statement                                                                 | Satisfied/ Strongly satisfied (%) | Mean estimate |
|---------------------------------------------------------------------------|----------------------------------|---------------|
| Structure and content of the educational manual                            | 95%                              | 4.95          |
| Understandability and accessibility of the information presented in the manual | 85%                              | 4.25          |
| Design and background of the cover and title pages                         | 95%                              | 4.75          |
| Illustrations, figures and tables                                          | 90%                              | 4.50          |
| Readability of the text/font size/color contrast etc.                      | 90%                              | 4.45          |

| Statement                                                                 | Agree/ Strongly agree (%) | Mean estimate |
|---------------------------------------------------------------------------|--------------------------|---------------|
| The information presented in the manual was useful to me                  | 95%                      | 4.75          |
| The information presented in the manual is well visualized with proper illustrations, figures and tables | 90%                      | 4.30          |
| I learned new information and practical knowledge                          | 95%                      | 4.75          |
| I found clear and precise answers to my questions                         | 85%                      | 4.05          |

Figure 1. Overall estimate of the presented educational manual.
be attractive and provoke interest to the content of the material.1,17

Hoffmann and Warrall stated that the adequate educational materials could improve health care effectiveness, patient knowledge, adherence to treatment, disease self-management and last but not least, to reduce the expenditures.1

One of the most effective ways to determine whether the elaborated printed educational materials were of good quality and useful was to test them among a sample target audience.23 The feedback supplied by the patients concerning the structure, content, layout and understandability of the information was of particular importance in order to evaluate the effectiveness of the educational materials. A number of researchers have used this approach to assess the educational materials elaborated by them.17-19,24

Lebanova and Getov19 assessed the readability level and usefulness of the educational materials elaborated by them on the nature of adverse drug reactions and the ways to report them by a target focus group consisting of patients. The obtained results showed that the educational materials designed for patients should meet certain criteria aiming at maximal usefulness.19

Brazilian researchers have reported their assessment of the relevance of an educational booklet about healthy nutrition during pregnancy, elaborated by them.17 The respondents’ feedback in that study showed that the educational booklet was relevant in relation to the used graphics, supplementing texts, reading motivation and information clarity.17

The results of our questionnaire study revealed that pregnant women with GDM evaluated highly the developed educational materials and 95% of them shared that the information supplied to them was useful. The necessity of provision of additional information that could be useful to the pregnant women as well as for their relatives was confirmed.

The main limitation of the study was that it covered only pregnant women diagnosed with GDM who already had had access to information about this medical condition. The involvement of healthy pregnant respondents as well as women in fertile age, planning pregnancy could identify a broader sample in respect to the usefulness of the compiled educational materials.

The created educational materials on GDM aimed to provide easily understandable information to pregnant women enabling them to acquire the necessary knowledge to implement daily and to support them in coping with the disease challenges. Further studies will be conducted on the effect of the printed educational materials on pregnant women’s knowledge and GDM self-management.

CONCLUSION

Even in the present era of Internet technologies printed health information can have a vital importance in strengthening the relationship between health care providers and patients. The provision of educational materials can improve patients’ health literacy as well as their personal responsibility, motivation and attitude to their health. The produced educational materials will serve as a written instruction given by the health care provider (physician or pharmacist) to women with GDM and to all mothers-to-be who would like to have additional health information about this disease. The pilot testing and approbation in the target group proves the quality and expediency of the educational materials.

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Печатные материалы по санитарному просвещению для женщин с гестационным сахарным диабетом - оценка пользы и удовлетворённости пациентов

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Введение: Печатные материалы по санитарному просвещению являются неотъемлемой частью процесса лечения. Ввиду неуклонного роста частоты гестационного сахарного диабета (ГСД) во всём мире, беременные женщины нуждаются в доступной и понятной медицинской информации, основанной на конкретных доказательствах этого осложнения беременности.

Цель: Адаптировать и разработать печатные учебные материалы относительно ГСД, а также оценить полезность разработанных материалов и степень удовлетворённости от них беременных женщин.

Материалы и методы: В настоящем исследовании был применён методологический подход, охватывающий три этапа: 1. Систематический обзор литературы; 2. Подборка печатных учебных материалов для беременных женщин с ГСД; 3. Оценка полезности и удовлетворённости учебными материалами фокус-группы, состоящей из беременных женщин. Анкета с семью пунктами обратной связи для самостоятельного заполнения была адаптирована для оценки удовлетворённости пациентов после ознакомления с учебными материалами.

Результаты: Было разработано учебное пособие в соответствии с основными требованиями к эффективности учебных материалов с точки зрения содержания, структуры, языка, оформления и иллюстраций. Полезность учебных материалов и удовлетворённость пациентов оценивалась в группе из 20 женщин с ГСД, являющейся представительной выборкой. Приблизительно 95% опрошенных согласны или полностью согласны с тем, что информация из учебных материалов является полезной. Степень удовлетворённости пациентов относительно понятности и доступности печатных материалов составляет 85%. Общая оценка учебных материалов была очень высокой - отлично (65%), очень хорошо (30%) и хорошо (5%).

Выводы: Предоставление учебных материалов по ГСД может повысить осведомлённость женщин с ГСД, а также их ответственность, мотивацию и отношение к личному здоровью.