The analysis of midwives’ knowledge on the education of women with gestational diabetes and preparation for it

(Analiza wiedzy i przygotowania położnych do edukacji kobiet)

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Abstract – Introduction: In recent years, gestational diabetes has appeared to be a growing diagnostic and epidemiological problem. Its frequency is dependent on factors such as race, environment, nutrition, lifestyle and diagnostics during pregnancy. It is important for not only pregnant women, but primarily midwives in charge of them to have a thorough knowledge on various methods of treatment and management of gestational diabetes.

Material and method: The survey was conducted between November and December 2012 as well as in January 2013 among 142 professionally active midwives employed in Gdańsk, Gdynia, Warsaw, Olsztyn, Kołobrzeg and Słupsk.

Results and conclusions: The study shows that the level of knowledge of surveyed midwives is high and satisfactory. There are no substantial differences in the level of knowledge of the respondents living in the cities where the study was conducted, in different age groups with different work experience and education. The vast majority of respondents have up-to-date knowledge on gestational diabetes obtained from reliable sources. However, the use of that knowledge is dependent on the place of work (clinic, hospital ward). Midwives indicate the need to increase their knowledge on gestational diabetes.

Key words - gestational diabetes, obstetrics, education and prevention.

Streszczenie – Wstęp: Cukrzyca ciążowa w ostatnich latach jawi się jako narastający problem diagnostyczny i epidemiologiczny. Częstość jej występowania uzależniona jest od czynników rasowych, środowiskowych, sposobu odżywiania, stylu życia jak również od sposobu prowadzenia diagnostyki w przebiegu ciąży. Istotne jest, aby nie tylko kobiety ciężarne, ale w głównym stopniu położne sprawujące nad nimi opiekę miały rzetelną wiedzę na temat poszczególnych metod leczenia i postępowania w przebiegu cukrzycy ciężarnych.

Materiał i metoda: Badanie ankietowe przeprowadzono w okresie listopad – grudzień 2012 roku oraz w styczniu 2013 roku wśród 142 położnych czynnych zawodowo, pracujących na terenie: Gdańska, Gdynia, Warszawa, Olsztyn, Kołobrzeg i Słupsk.

 Wyniki i wnioski: Z przeprowadzonych badań wynika, że poziom wiedzy badanych położnych jest wysoki i zadowalający. Nie ma zasadniczych różnic w poziomie wiedzy badanych, jaki prezentują położne mieszkające w miastach, w których przeprowadzono badanie, w zróżnicowanych grupach wiekowych, z różnym stażem pracy zawodowej oraz wykształceniem. Zdecydowana większość badanych posiada aktualną wiedzę na temat cukrzycy ciężarnych uzyskaną z wiarygodnych źródeł, jednak zakres wiedzy wykorzystywany jest w zależności od miejsca pracy (przychodnia, oddział szpitalny). Położne wskazują potrzebę zwiększania zasobu wiedzy na temat cukrzycy ciężarnych.

Słowa kluczowe - cukrzyca ciążowa, położnictwo, edukacja, profilaktyka.

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I. INTRODUCTION

In recent years, gestational diabetes has appeared to be a growing diagnostic and epidemiological problem. Its frequency is dependent on factors such as race, environment,
nutrition, lifestyle and diagnostics during pregnancy [1]. The populations which have been studied so far, it pertains to 3–20% of the cases and it is predominantly (84%) properly recognised and diagnosed. It can be a transitive disorder; nevertheless, it may also remain after the birth on a permanent basis [2].

Proper nutrition, prophylactic tests, physical activity and more and more accessible healthcare are considered major factors determining one’s health and quality of life [3]. It can be assumed that every pregnant woman wants to be responsible for her own health and proper development of her child. Taking careful and safe measures aimed at that is possible only if the pregnant woman with diagnosed diabetes understands what is happening to her body and is fully aware of it. It is important to take advantage of all the opportunities provided by modern diagnostic medicine. It is imperative that not only pregnant women but predominantly midwives in charge of them have solid knowledge on methods of treatment and procedures. There are a number of important elements to the treatment of diabetes, therefore the reliability of information and quick actions taken by professionals thanks to their knowledge are expected by pregnant women.

Gestational diabetes (or: gestational diabetes mellitus, GDM) is defined as carbohydrate metabolism disorders which were first found during pregnancy [4,5]. It is the most common obstetrical pathology and a strong clinical risk factor influencing the life of the mother and child in the future [4].

According to the statistical data available, diabetes is the most common metabolic complication during pregnancies. In Europe, nearly 3-5% pregnant women suffer from it [5]. As the studies conducted across the country show, the frequency of GDM was 3.4%. It is more common in certain ethnic groups. A study conducted in the UK showed that among women of Asian origin, GDM was 5 to 10 times as common as among white women [6].

Pregnancy complicated by diabetes is defined as a high-risk pregnancy. Such patients are much more likely to have a miscarriage, preterm delivery, stillbirth, foetal development disorders (macrosomia) and other pregnancy complications such as hypertension, preeclampsia, urinary tract infections, genital tract infections, polyhydramnios and congenital defects of the foetus.

No counselling and no pregnancy planning remain predominant factors affecting negatively the course of pregnancies of mothers suffering from diabetes [7, 8]. Proper course of pregnancy, a healthy mother and a healthy child require interdisciplinary medical attention. It cannot be provided if the pregnant woman herself is not dedicated to the cause. The responsibility for her own well-being and the child’s health is to a large extent hers. Education is crucial here. The correct model of educating pregnant women with diabetes should include: pregnancy planning, thorough diagnostics, the treatment of diabetes, proper diet and limited physical activity. The medical, obstetric and nursing teams have the responsibility to ensure that the procedures implemented during delivery are in accordance with healthcare standards and further care over the woman and her child is satisfactory [9].

During pregnancy, a number of physiological changes take place in a woman’s organism. Their purpose is ensuring that the foetus develops correctly. They are directly influenced by the hormonal condition. As far as carbohydrate metabolism is concerned, the level of glycaemia must be maintained. Glucose is a basic energy substrate a developing foetus needs [10]. Pregnant women have lower concentration of glucose than non-pregnant ones [11]. Also, the fact that tissues are less sensitive to insulin is commonly observed [11].

Gestational diabetes develops most frequently during the second half of pregnancy [15]. Glucose is transported in the placenta via facilitated diffusion, which is why glycaemia of the developing foetus is automatically conditioned by the mother’s current level of glycaemia [11].

During the first half of pregnancy, the concentration of hormones (progesterone and oestrogens) increases. The production of sex hormones is taken over by the placenta; the levels of prolactin and placental lactogen are raised. The rise in these levels may play a significant part in the increased appetite and body weight of the majority of future mothers. In the second half of pregnancy, the peak of placenta peptide hormone production (prolactin and placental lactogen, which have the characteristics of diabetogenic factors) is observed. The glucose tolerance is impaired. At the end of pregnancy, the foetal development is intense – therefore the demand for glucose is also increased. The mother’s organism is developing in order to increase the glucose transport through placenta. At that time, the foetus’s and mother’s organisms compete for glucose intensely. After the delivery, the demand for insulin rapidly drops [12].

The classification of diabetes in pregnant women:
1. Gestational diabetes (or: Gestational diabetes mellitus, GDM) – carbohydrate tolerance disorders of different intensity as well as diabetes developing or first diagnosed during pregnancy;
2. Pregestational diabetes mellitus (PGDM) – a diabetic woman gets pregnant (type 1, 2 or MODY) [13, 14].

Two classes of GDM are distinguished:
G1 – incorrect glucose tolerance with normalised glycaemia; condition to observe the diet
G2 – hyperglycaemia on and empty stomach as well as after meals; diet and insulin treatment required [14].
Gestational diabetes diagnostics

The American Diabetes Association recommends doing a screening on all women in the GDM risk group.

According to the latest recommendations of the Polish Gynaecological Society, the diagnostics of gestational diabetes may be twofold: involving screening (GCT 50 g) as well as a diagnostic test (OGTT 75g). Screening can be omitted in the diagnostic process [10, 15]. During the first visit to a doctor, all pregnant women should have their blood glucose level tested on an empty stomach. Also, a general urinalysis should be performed. Blood glucose of no more than 105 mg% on an empty stomach means that glycaemia is correct. However, if the level is 105 mg% or more, a diagnostic test should be performed.

Screening: it should be performed on all women between weeks 24 and 28 of their pregnancy. After applying 50 g of glucose orally, its level in blood is tested after 60 minutes. The test can be performed regardless of the time of the day and how long ago the woman had a meal. It is not required for the patient to be on an empty stomach. If the result after one hour since the application of glucose is below 140 mg%, the level is correct. If the glucose concentration is 140 mg% or more and less than 180 mg%, a diagnostic test with oral application of 75 g of glucose should be performed. Glucose level of 180 mg% or more means diabetes – the pregnant woman should be referred to a regional diabetologic centre in order to have her further treatment planned [10, 16].

Diagnostic test: according to the recommendations of WHO, it should definitely be performed on an empty stomach. The woman should, for at least 3 days prior to the test, observe an unrestricted diet including at least 150 g of carbohydrates a day. Furthermore, she should not give up physical activity. Glucose levels are measured on an empty stomach, before drinking a 75 g glucose solution, and 2 hours after the glucose application. Diabetes is diagnosed if at least one of the values exceeds the norm: 105 mg% on an empty stomach and 140 mg % 2 hours after the 75 g glucose intake.

The screening and the diagnostic test are suggested/recommended to be performed on every woman on an outpatient basis (ambulatory care).

Healthcare in cases of diabetes during pregnancy

Prenatal care is crucial to detect, diagnose and treat pregnancies considered high-risk ones. Only very early diagnosis of various pathologic conditions allows one to take appropriate and effective prophylactic and therapeutic measures at a right time. Successful teamwork of the doctor and the midwife contributes to the good result of the perinatal care.

The basic aims of prenatal care are: informing, counselling and educating pregnant women, dealing with ailments related to pregnancy and controlling the progress of pregnancy. Proper obstetric care should include all medical, social and mental needs of a woman. The basis for any type of successful therapeutic measures is general education. A midwife, by means of educating patients, allows them to acquire the necessary knowledge and helps them develop right habits and health behaviour during pregnancy. Patients with diagnosed diabetes should, after being instructed by a midwife, be able to measure their glycaemia using a strip glucose meter. Recording the values measured in a notebook allows one to spot any abnormalities timely. It is an important factor as far as the effectiveness and safety of the treatment is concerned.

If the diabetes is stable, the glycaemic level should be measured at least 6-9 times a day: on an empty stomach in the morning, before meals and 1 hour after meals. However, if the diabetes is unstable (permanently or temporally), the tests should be performed much more frequently. Pregnant women using insulin should measure the glycaemic level also at night. In order for the pregnancy to develop correctly, it is necessary to obtain a glycaemic level of 60-95 mg% on an empty stomach and < 140 mg% one hour after meals.

The reflection of how stable the diabetes and how effective the treatment of it were during the last 3 months is provided by the measurement of glycosylated haemoglobin [17,18].

A pregnant woman should see a gynaecologist or obstetrician and a diabetologist regularly – every 2 or 3 weeks. Such frequent visits are necessary for the assessment of body weight, kidney function, visual organ, blood pressure and possible demand for insulin. In case the pregnant woman observes significant abnormalities in the results accompanied by moodiness and increasing alarming symptoms (sleepiness, bad mood, muscular tremor, visual disorders, polyuria), medical attention is urgently required. Ailments and typical signs are most frequently related to significantly increased glycaemic level. Patients suffering from diabetes and planning a pregnancy as well as those already pregnant should be supervised by an ophthalmologist because of the risk of diabetic retinopathy [19].

The basic elements of treating diabetes are: proper diet and moderate physical activity (unless there are any concurrent diseases or ailments in which activity is categorically contraindicated). Generally, having 6 meals a day is recommended: 3 main ones and 3 minor ones. Pregnant women should have a meal right before going to sleep. That prevents them from nocturnal hypoglycaemia and ketosis. Calorie requirement should be determined on an individual basis and modified so as to maintain optimal body weight gain (8-12 kilos on average), depending on the original body weight [11].
If the pregnancy is complicated, it is important to monitor the intrauterine condition of the foetus. It can be determined via ultrasound tests and when the pregnancy is more advanced – also cardiotocography. Other valuable methods of assessing the well-being of the foetus include counting foetal movements by the mother from gestational week 24 on [11]. Sometimes, an earlier hospitalisation of the patient and preterm delivery are required [20].

The delivery of a pregnant woman with diabetes

In cases of diabetes during pregnancy, the most important principle pertains to the assessment of perinatal complication risk. All actions aimed at minimising it should be taken. Presently, uncomplicated diabetes is not an indication for instrumental delivery or preterm completion of pregnancy.

An indication for a Caesarean section is the weight of the child exceeding 4200 g (determined by an ultrasound test). In such cases, there is a high risk of shoulder dystocia.

When the delivery is natural, the glucose level should be checked every 1-2 hours. What is more, the acid base equilibrium should be measured. If the glycaemic level drops below 100 mg/dl, glucose should be applied intravenously (120-150 ml/h). On the other hand, if glycaemia exceeds 160 mg/dl, regular insulin should be applied in a 0.9 % NaCl solution (concentration: 1IU/ml) in an infusion pump (with infusion speed determined by a doctor depending on the current glycaemic level). The optimal serum glucose during childbirth is 60-120 mg/dl. [21].

Complications related to gestational diabetes in mothers and children

Diabetes may have a negative impact on the life on a newborn child. It is alarming that the number of pregnant women with diabetes diagnosed is steadily increasing. These women are more susceptible to vaginal, vulvar and urinary tract infections, miscarriages, arterial hypertension, preeclampsia and preterm deliveries. A sudden condition in unstable diabetes that requires an immediate intervention should it occur is ketoacidosis. Presently it is diagnosed relatively rarely as the quality of healthcare during pregnancy is getting better and better [21].

The neonates born to mothers diagnosed as diabetic have higher risk of suffering from the following disorders: hypoglycaemia, hypocalcaemia, hyperbilirubinaemia, respiratory distress syndrome. Such neonates very frequently have large birth weight as a result of the pregnant mother’s hyperglycaemia [22, 23, 24]. However, it is reported that such conditions may occur even if diabetes is stable throughout the duration of pregnancy [25]. Developmental abnormalities may also pertain to the structure of the placenta [23]. Hydramnios and twice as many perinatal traumas of neonates are observed more frequently [26,27]. Congenital defects are statistically more frequent than in general population. They are 3 times as frequent in children of diabetic mothers (6%) as in children of healthy mothers (2%) [24].

The educational role of midwives

General education is crucial in gestational diabetes. There can be many forms of it: from group and individual education to self-education of the pregnant women. Educating may consist in lectures, instructions, practical exercises, group workshops and individual cooperation with a patient. The education programme must be taught using different means depending on the medical situation and the degree of a patient’s awareness. It should be possible both on hospital and outpatient basis. The programme should include both theoretical and technical knowledge. A pregnant woman’s participation in the therapeutic process is one of the determinants of its effectiveness. In terms of medical issues, pregnant women should be educated on the nature of the illness and proper nutrition (quality and quantity of meals, scheduling meals properly at different times of day). What is more, the principles of insulin therapy should be familiar to them so that they can modify their insulin doses depending on their diet and know how to handle glycaemic oscillation. The women should also be aware of how to limit their physical activity and prevent hypoglycaemia, hyperglycaemia and ketoacidosis. The most crucial technical issues to be taught include: the operation of glucose meter, insulin application technique (the method and locations of injections) as well as techniques of measuring glycaemia, glycosuria and acetonuria levels. It is important for the patient to be able to take her own blood pressure, calculate her body weight and keep the right record of the data.

Aims of the study

1. Getting to know the midwives’ level of knowledge on diagnostics of gestational diabetes and the respective procedures.
3. Determining what the knowledge deficit is and to what extent professional courses and training are needed.
II. MATERIALS AND METHODS

The research method used in the study was a diagnostic poll with survey technique. The research tool was a questionnaire prepared by the authors. Participation was voluntary and anonymous.

Before they started filling in the questionnaire, the respondents were informed about the purpose of the study. The questionnaire consisted of 15 questions and a patient data part.

The area of the study and study group characteristics

The questionnaire study was conducted between November and December 2012 as well as in January 2013 among 142 professionally active midwives employed in Gdańsk, Gdynia, Warsaw, Olsztyn, Kołobrzeg and Słupsk. The most numerous groups were midwives from Warsaw (38% of all respondents) and Gdańsk (34%). These were followed by Gdynia (11%), Olsztyn and Słupsk (7% each) and Kołobrzeg (4%).

Most midwives were between 31 and 45 years of age (52%). 30% of them were in the age range of 46 to 60, whereas the remaining 18% were between 20 and 30. Midwives who graduated from medical colleges were dominant (41%). 39% of them had a Bachelor’s degree in obstetrics, while 20% had a Master’s degree in obstetrics.

The professional experience of 35% of them was between 11 and 20 years. 31% had worked for up to 10 years and 27% were those who had worked for 21-30 years. 7% of them had work experience of at least 31 years.

Most of the respondents worked in hospitals (84%). 11% named an outpatient clinic as their employer, whereas 5% of them worked simultaneously in a hospital and an outpatient clinic.

Largest percentages of the interviewees worked at labour wards (28%) and maternity wards (27%). Less numerous groups were assigned to pathology of pregnancy wards (12%), gynaecological wards (11%) and neonatal wards (8%). 98% of them worked in urban areas, while 2% of them were employed in rural areas.

III. RESULTS

The study group were asked if they had participated in courses on gestational diabetes. 41% of them claimed they had. In this subgroup, 21% had such a course once, 13% - twice, 6% - three times and 1% - four times. The remaining 59% of the respondents had participated in no course on gestational diabetes whatsoever.

82% of them stated that courses on gestational diabetes did live up to their expectations. The rest of them (18%) denied that.

The midwives studied were asked in general if they were familiar with the concept of gestational diabetes. 99% of the answers were affirmative, whereas 1% responded negatively. In the more detailed question related to the nature of gestational diabetes, 89% of the respondents selected the option defining it as a disease connected with glucose tolerance disorders. Insulin tolerance disorders were selected by 9%. 1% of them ticked both options.

The studied group were asked if they knew what the symptoms of diabetes were. 94% of the answers were affirmative, whereas 6% of them were negative. The ones who provided the former were asked to specify the symptoms that may suggest diabetes. The responders were allowed to select one or more symptoms they considered characteristic of diabetes. The symptoms most frequently singled out were: sleepiness (selected 30 times), polyuria (22 times), weakness (15 times), hyperhidrosis/sweating (13 times), huge appetite (11 times), obesity/excessive body weight gain (10 times) and itching (8 times).

The responders were asked if they knew what tests every pregnant woman should undergo to find out whether or not she had gestational diabetes. 98% claimed they did, while 1% responded negatively. Also, 1% had no answer specified. The tests singled out most frequently by the 98% who claimed they knew were: glucose tolerance test, glucose level test on an empty stomach and a general urine test. Single midwives also selected glycated haemoglobin level test.

Most of the midwives were able to specify the gestation weeks when glucose tolerance tests are performed. 2% of them did not know the answer. The most popular answer was “week 24-28” (selected by 56% of the midwives studied).

The study group were asked to describe the procedure of glucose tolerance tests with application of 50 and 75 g of glucose. 51% provided correct answers, describing the process correctly. 41% were wrong, whereas 8% were not aware of the procedure at all.

The study group claimed they knew what the right glucose levels on an empty stomach were. 94% selected 70-95 mg%, whereas 6% claimed it was 96-125 mg%.

Another question pertained to risks and complication of gestational diabetes that may affect the child. While 94% of the respondents stated they were aware what these complications are, 5% of them claimed to have no knowledge on it and 1% offered a completely unrelated answer – it was considered incorrect in the analysis. 5 most frequent answers were: foetal macrosomia, hypoglycaemia, hyperglycaemia, respiratory distress and stillbirth.
The midwives were asked if they were aware of the delivery procedure in cases of diabetic mothers. 64% declared that they were aware of it, whereas 36% had no knowledge on it.

What is more, the sources of the midwives’ knowledge on gestational diabetes were also statistically analysed. 48% read medical literature in order to supplement their knowledge. 39% of them read medical journals for midwives and nurses and 40% participated in relevant courses.

The respondents were also asked about their own assessment of their knowledge on gestational diabetes. 87% of them were willing to learn more and believed their knowledge was incomplete. 9% stated their knowledge was extensive. 3% were not interested in the issue, whereas 1% admitted to having no such knowledge.

As a result of the diagnostic poll, the following correlations were observed

Responses to questions 6 and 18 were compared in order to show how many respondents singled out courses and training as the source of their knowledge and yet participated in no courses. It turned out that 15.5% of them did so.

Also, the results from questions 4 and 13 were compared – the correct answer to the question on glucose tolerance test with glucose 50 and 75 g application was analysed with reference to the ward a midwife was employed at. The most correct answers were provided by the midwives working in outpatient clinics (67%), followed by neonatal wards (60%) and obstetric wards (56%). The remaining percentages were: midwives from pathology of pregnancy wards (47%), labour wards (44%) and gynaecological wards (43%).

IV. DISCUSSION

Broad and widely available diagnostics and early recognition of gestational diabetes symptoms are necessary factors to secure proper course for pregnancies complicated by this condition. After over 40 years of clinical research, experiments and observations, one may be justified in claiming that all the issues related to gestational diabetes have already been explored.

In this paper, the level of midwives’ knowledge on gestational diabetes was analysed. The survey results obtained suggest that professionally active midwives employed at outpatient clinics and hospitals are very much interested in the issue of gestational diabetes.

There were no significant differences observed between the level of knowledge in each age group. Furthermore, it is not related to education and work experience either. It was noted, however, that some parts of that knowledge are used only depending on the place of work (a particular ward) where the midwives are employed. It is alarming because, as it implies, the midwives do not provide complex care every pregnant woman is due [28].

It was observed that a group of midwives (59%) did not participate in any professional course on the issue and use only the knowledge they acquired during their professional education. Those who did participate in courses (41%) were satisfied with the content (82%). Considering the fact that midwives who graduated from medical colleges were dominant in the study group (41%), one can conclude that the respondents hardly fulfil their obligation to extend their professional qualifications.

In midwifery, there is a high demand for different forms of professional education and training [28]. One can assume that many midwives, given the years they have worked in the profession, working in shifts, exhaustion, being overburdened with duties, underinformed about possible courses and insufficiently motivated by their employers, stop thinking about broadening their qualifications. Failure to invest in one’s knowledge, withdrawing from good contact with patients and abandoning the educational and preventive role are significant milestones one the way to professional burnout [29,30,33].

However, one can be satisfied with the fact that 41% of the midwives interviewed did participate in courses in order to broaden their qualifications. Their working experience was 21 to 30 years (32%) and 31 or more (61%). Midwives with more extensive working experience and Bachelor’s or Master’s degree in obstetrics were the ones to take up courses more frequently. This indicates they have a need to keep on developing [34]. The midwives who graduated from medical colleges predominantly (60%) did not participate in any professional training on the subject. Furthermore, a vast majority (75%) of midwives with working experience of 10 years or less did not take part in such courses either. That may signify either the fact that the knowledge they acquired during their professional education is not outdated yet or that they do not need to revise what they already know.

One contradiction was detected in the results obtained. Some midwives interviewed provided false answers, which was proved in the analysis. 15.5% of them pointed to professional courses and the source of their knowledge and yet participated in no courses on diabetes. That might indicate the attempt to mislead the authors and falsify the results to the benefit of the study group.

Having analysed the results obtained, one can conclude that midwives’ general knowledge on gestational diabetes is satisfactory. Both the respondents in this study and statistical data on similar issues show that the level of knowledge on gestational diabetes is high [35].
The group of midwives studied here declared they had knowledge on the disease entity (99%), the nature of the disorders (89%), symptoms of diabetes (94%) as well as diagnostic procedures in the case of pregnancy (98%) and the results obtained seem to confirm that. A vast majority of the respondents (94%) knew what the correct glucose level on an empty stomach is. The same percentage could name the risks and complications a child is threatened by. Not many (just over a half – 51%) knew the procedures of screening and diagnostic test. The alarming result of the study was the general knowledge on delivery in cases of gestational diabetes – 64% of the respondents were unable to state what the correct procedure is. Nevertheless, in the detailed comparative analysis the midwives working at labour wards were observed to know the procedure very well (86%). All the issues related to gestational diabetes should be familiar to every midwife as the lack of reliable knowledge may lead to marginalising symptoms which require medical attention.

In a study conducted in Poland in 2011 in eastern areas of Poland, the extent to which midwives are prepared to educate pregnant women was assessed. According to around 50.39% studied respondents, a midwife is definitely a right person to educate pregnant women on nutrition [36]. The results of another study conducted in the same region in 2011 were also satisfactory. 58.14% of the responders studied claimed that other study conducted in the same region in 2011 was based predominantly on medical literature and journals for nurses and midwives, and also to a degree on the Internet. The majority of the respondents (87%) were willing to learn more on gestational diabetes, believing their knowledge was incomplete. That shows they have a constant need to update their knowledge.

V. CONCLUSIONS

1. The knowledge of the midwives studied is high and satisfactory.
2. There are no substantial differences in the level of knowledge of the respondents living in the cities where the study was conducted, in different age groups with different work experience and education.
3. The vast majority of respondents have up-to-date knowledge on gestational diabetes obtained from reliable sources.
4. The use of that knowledge is dependent on the place of work (clinic, hospital ward).
5. Midwives indicate the need to increase their knowledge on gestational diabetes – there is a large demand for education on the issue.

VI. REFERENCES


