

Implementation of a new program of gestational diabetes screening and management in Morocco: A qualitative exploration of health workers' perceptions

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Abstract

Background Gestational diabetes mellitus (GDM) is associated with an increased risk for a future diabetes mellitus in women and their children. As linkage between maternal health and non-communicable diseases, antenatal care plays a key role in the primary and secondary prevention of GDM associated adverse outcomes. While implementing a locally adapted GDM screening and management approach through antenatal care services at the primary level of care, we assessed its acceptability by the implementing health care providers. **Methods** As part of a larger implementation effectiveness study assessing a decentralized gestational diabetes screening and management approach in the prefecture of Marrakech and the rural district of Al Haouz in Morocco, we conducted four focus group discussions with 29 primary health care providers and seven in-depth interviews with national and regional key informants. Looking at the main themes screening, diagnosis, treatment and service organization, we thematically analyzed the data using a combined de- and inductive approach. **Results** The intervention of screening and managing women with gestational diabetes added value to existing antenatal care services but presented an additional workload for first line health care providers. Lack of knowledge about gestational diabetes in the community but also by private health care providers demanded more time for counseling. Nurses had to adapt recommendation on diet to the socio-economic context of patients. Despite the additional task, especially nurses and midwives felt motivated by their gained capacity to detect and manage gestational diabetes and the ability to take decisions on follow-up. **Conclusions** Detection and initial management of gestational diabetes is an acceptable strategy to extend the antenatal care service offer in Morocco and to facilitate service access for affected pregnant women. Despite its additional workload, gestational diabetes management can contribute to the professional motivation of primary level health care providers.

Background

Gestational diabetes mellitus (GDM), an elevated blood sugar for the first time detected in pregnancy, is gaining increasing global health attention not only due to its rising prevalence worldwide but also its impact on the health of future generations [1]. The developmental origins of health and disease concept implies that early interventions already targeting the uterine environment of the unborn child can reduce the future risk for diabetes and other metabolic diseases [2]. Early detection of GDM and its management can contribute to diabetes risk reduction in both the unborn child and the mother in the long term and limit obstetric complications associated with GDM in the short term [3–6].

The role of primary health care services is pivotal in controlling non-communicable diseases (NCDs) [7]. Antenatal care (ANC) can play an active part in primary and secondary prevention of GDM associated outcomes and thus act as a link between maternal health and NCDs. As such, it has the potential to assure a continuity of care for pregnant women with GDM and their children through the primary level.

To assess the feasibility and acceptability of GDM screening and management through an approach that was tailored to the primary level of care in Morocco, we conducted an effectiveness implementation trial

[8]. The study included a qualitative part to explore the perceptions of health care providers and key informants regarding GDM screening and management. The objective of this qualitative study is to contribute to a better understanding of the challenges primary health care providers face when adding GDM screening and management to their scope of activities.

Methods

Between November 2016 and November 2017, we conducted a hybrid effectiveness-implementation trial to assess clinical effectiveness of a GDM screening and management intervention and its implementation through first level health care providers [8]. One of the objectives was to explore opportunities and challenges of GDM testing and its initial management according the IADPSG/WHO criteria [9–11] through ANC providers in Morocco.

Study setting

We carried out the study in 20 randomly selected primary health care facilities, 10 intervention and 10 control sites in the two districts Marrakech and Al Haouz located in the region of Marrakech-Safi. While Marrakech is predominantly urban, neighbouring Al Haouz is a rural district in the Atlas Mountains. Both districts have a total population of 1.9 million and 92 health centres and 53 dispensaries provide primary health care services to the population. [12]

Study participants and sampling

Between January and March 2017, we conducted four focus group discussions (FGD) with primary health care providers. Two health care givers involved in GDM screening were invited from each of the 10 intervention and 10 control sites. Overall, 15 providers from the 10 intervention health centers and 14 providers from the 9 control facilities attended the FGDs. Each FGD was conducted with between seven and nine participants and separate focus groups were led with providers from control and intervention sites in both study districts. In addition, we did seven interviews with key informants including clinicians involved in diabetes care (2) as well as program managers (public health/ maternal health/ NCD) on national (2) and regional/district level (3).

Data collection

FGDs took place in a quiet room at the district/provincial directorates and were led by an experienced female moderator and a research assistant taking notes. Interviews with key informants were conducted at the offices of the interviewees. Topic guides were used to explore opportunities and challenges for GDM screening and management, and to assess perceptions about the feasibility of such an intervention as part of the existing service package at the primary level of care. Topics selected for discussion included the role of antenatal care to screen for GDM, providers experiences with GDM screening and management and their experience of women's attitudes towards detection and management of GDM, the influence of GDM screening and management on their work and the communication with other actors.

The topics for the questions were derived from the challenges identified by providers during a situational analysis conducted prior to this trial [13]. Mean interview duration was 39 minutes (min 17; max 80) and FGDs lasted on average 95 minutes (min 80; max 100). Before each interview and FGD, participants were requested to read the provided information letter and give their written informed consent. All interviews and discussions were digitally recorded and later transcribed ad verbatim.

Data analysis

All transcripts were transferred into NVIVO software version 10. To start with the thematic analysis, all interview transcripts were first read repeatedly to familiarize with the data. Subsequently, texts were coded using a deductive approach oriented at the interview guide topics while open coding was applied for not previously included aspects. Codes were then grouped to main categories and themes. Codes and categories were compared and discussed by the two researchers involved in data analysis. Translation of the data from French into English took place during manuscript writing and accuracy of translation was ensured by two bilingual researchers.

Results

Mean age of FGD participants was 41 years and their average professional experience 13 years. Most participants were female (93.1%). Nurses and midwives represented the majority of participants (75.8%, n = 22), 24.1% of respondents (n = 7) were doctors. Key informants were senior program leaders at national and regional/district level working in the field of diabetes and/or maternal health (n = 5) and clinicians involved in diabetes care at referral level (n = 2). Our results revealed two main themes that include the challenges providers face when screening and managing GDM but also the motivational leverage such an additional task can provide.

Health care providers mentioned several challenges namely acceptability of testing, diagnosis and treatment, the role of the family and private providers of care as well as the issue of service organization for GDM related care.

Women's acceptability of testing & diagnosis

Testing is only the first step and when it comes to diagnosing GDM, providers sometimes face the problem of acceptance.

*"The majority of women do not know what gestational diabetes is. She tells you 'I'm not diabetic when I'm not pregnant, hence I do not have diabetes when I am pregnant'. [...] Consequently, they do not accept."
(FGD participant, control site)*

Having a 'disease' in pregnancy is difficult to accept and might be a reason not to return for further ANC visits because of the anxiety associated with not being healthy. For some women the diagnosis was shocking, as they associated the term 'diabetes' with a life-long handicap or the need for insulin.

“She cried- a woman with a history of a child who died and another child who is sick. When I told her she has gestational diabetes, she cried.” (FGD participant, control site)

Therefore, the use of terminology is very important and can reduce not only fear and stigma associated with the term ‘diabetes’ but also places gestational diabetes in the right context. Some of the nurses told us they avoid using ‘diabetes’ in their explanations.

“Most of the time I do not pronounce the word diabetes. I tell her ‘you have a sugar level that is a bit high. A pregnant woman should not have such a level [...]” (FGD participant, control site)

Given the high prevalence of diabetes in Morocco, some women already have diabetic relatives. Being familiar with high blood sugar levels of diabetic family members, the lower values for the diagnosis of gestational diabetes (0.92g/l), give them a false sense of security.

“For them 1g is nothing, because they have diabetics in their family. When one has 1g, 1.5g that’s nothing at all [...]. So, they left and consulted others, specialists.” (FGD participant, control site)

Providers of the intervention sites stated that offering extended services in the health centers including blood tests would not only reduce delays but attract more women to ANC and increase client satisfaction.

“Before: the woman came: just weight, height. Now, she is aware that something is being done for her and she is satisfied with the service she is given.” (FGD participant, intervention site)

Providers from control sites highlighted that they often see the test results only late in pregnancy due to delays to get tested in the public sector. A perceived additional value of specific tests and examinations such as screening and ultrasound through ANC was highlighted by several respondents.

“I think this will contribute to a better [perceived] ANC quality [...]. The Moroccans like real medical acts, that makes them more satisfied.” (Key informant)

Involving the family

Husbands and family play a crucial role for the acceptance of the condition and for assuring follow-up. Several respondents mentioned the importance to involve family members in counseling.

“The woman tells me ‘you have to explain it to my husband’ because the husband told her ‘you are not diabetic; these values are not high’ [...]. Therefore, I have to explain her husband why he needs to bring her to attend the follow-up.” (Key informant)

In addition to family support, providers highlighted that women would benefit from peer support. Therefore, some of the providers organized follow-up in their services in such a way that affected women, including newly diagnosed, could meet and exchange experiences.

"[...] She will speak about her experience, she will speak about her failures and successes [...] It is extremely motivating for other people to listen to this patient and ask practical questions. [...] When a doctor or a nurse speaks, they still remain educators, he or she did not experience gestational diabetes [...]." (Key informant)

Besides, there is a lack of knowledge about gestational diabetes in the general population and a need to sensitize about screening and treatment possibilities. GDM is not covered by the media which was considered by providers a missed opportunity in support of their educational task.

"If the media plays its part, it is much easier. If people knew what gestational diabetes is, the risks and everything, we could have services such as those we have recently for breast cancer. Women come alone to ask for screening, because they heard that on TV." (FGD participant, control site)

Alignment with the private physicians

The lack of knowledge is not only confined to the population. Even health care providers have limited information about gestational diabetes and latest diagnostic criteria. Often, they use the same diagnostic thresholds for gestational diabetes as for diabetes. This was reported for women who attended the private for-profit sector or other health facilities not included in the study. The advice given there stood often in contrast to the information women received in the study health facilities.

"It's a problem with the private [sector]. [...] When she consulted the private [provider], she had a blood glucose of 1,1 [g/l] and they tell her 'You have nothing. They are doing a study, they lie to you to earn money [...]'. They disgrace us and we are in conflict with each other. And this is not good, because public health cannot do everything and idem for the private sector. We have to be complementary." (FGD participant, control site)

However, a disagreement can also be an opportunity for behavioral change. Informal conversations with nurses of some of the health centers during our supervision revealed that several private providers around their centers started diagnosing women with GDM based on a fasting glycemia level of 0.92 g/l which was not the case before. This change in practice originating in the public sector and being taken up by private providers is a positive development that reaffirms nurses working in the public centers.

"By creating conflict, one creates the truth. [...] It will simply result in the change of attitude of this [private] physician towards reality [...]. He will go and look at the topic of gestational diabetes. [...] Maybe the doctor will oppose once or twice. But considering the frequency of gestational diabetes he will realize that the nurse or the doctor or the midwife at the health center is right. So, it's maybe positive that this way of managing [GDM] will exceed the public sector and reaches even the private [sector]." (Key informant)

Acceptance of treatment by women and their families

After a woman is diagnosed with GDM, the first treatment usually consists of nutritional therapy coupled with physical exercise. Nutritional counselling providing information on preparation and how to integrate

the diet into the family meals need particular consideration.

“To ask her to eat alone in front of the family, of her husband, depresses her. For example, when you ask her to eat alone, her husband loses his respect for her, even the mother-in-law. [...] It is better to ask her what she eats and adapt her diet to that and let her eat with her husband and children.” (FGD participant, intervention site)

For the purpose of this study, the Ministry of Health developed for women with GDM a brochure on nutrition. However, particularly nurses in rural areas found it difficult to follow its recommendations, because these did not consider financial constraints to purchase certain food items. Therefore, health care providers had to adapt recommendations to the local and the patient’s socio-economic context.

“When I explained to her what she was going to eat she was surprised. She told me she will be hungry. This was a poor woman, she had conflicts with her husband, conflicts with her mother-in-law and no means [...]. We asked her what she normally eats to try and advise her a diet that was adapted to what was available for her and according to her means without the need to buy more items; step by step with the food she uses at home.” (FGD participant, intervention site)

Despite the difficulties for some women to follow a diet, the majority tries to adhere because they fear insulin. This is the card played out by some nurses to make women adhere to diet.

“We insisted that they do physical exercise and follow a diet to avoid proceeding to a treatment with insulin. We explained to them that ‘otherwise you are obliged to be treated with insulin’. This has pushed patients to adhere.” (FGD participant, control site)

In Morocco, only insulin is currently approved as treatment for women whose gestational diabetes is not sufficiently controlled by diet alone. However, not all doctors feel comfortable with insulin prescriptions.

“I think what is worrying and what scares the caregiver is to manage also insulin. Is it the patient who is afraid of insulin or is it the doctor who is afraid of insulin? So, it leads to this therapeutic inertia. [...] So, if metformin is available, the management is more flexible, it will make things easy.”(Key informant)

Service organization

Adding GDM screening and follow up to the already full work schedule of primary health care providers often needed some re-organization of services in the intervention facilities. To accommodate GDM as additional activity in their ANC schedule, some providers limited the number of women for GDM screening and follow-up and organized additional sessions for testing.

“I tried to make a planning. For example, I do one or two sessions a week. I note the names of the women I have summoned, for example 5 to 6 women per session, just to limit this problem. Because really, it coincides with my other daily activities [...]” (FGD participant, intervention site)

In the discussions, the issue of workload and task shifting came up several times. Some providers reported problems to delegate their task of GDM screening and follow-up when on leave, as only two providers per center (nurse/midwife and doctor) were trained in the intervention.

“Someone must be able to work in my place. If I get sick or go on leave, the program stops. [...]. It is necessary that everyone knows how to conduct this activity, not a single person in the center. If she is not there, everything stops.” (FGD participant, intervention site)

All the above-mentioned aspects reflect the extra burden of this activity for ANC providers in terms of time management and service organization. Nevertheless, the motivational effect of incorporating GDM screening and management came up as an important facet of this intervention.

Providers highlighted that screening and regular follow-up improved trust and their relationship with the patients.

“This study gave great importance and value to our ANC, because the women do not only come to measure uterine height, weight and do ultrasound. There is an additional activity that strengthens the relation with the woman, because she spends the entire morning at our center with the midwife.” (FGD participant, intervention site)

ANC providers felt motivated and valued by their patients and gained in esteem and recognition for their provided services.

“Really, I feel useful doing something with these women...[...]. I feel that on a personal level I learnt new things I did not know before. I acquired additional information. Really this affects even your relationship with the woman. You have more confidence. You offer her something you did not know about before. [...] When you speak with the woman at ease and you provide her with useful information, she trusts you, she asks you questions. At this moment, in this situation you feel that you are useful and motivated to do more things despite the workload and all that.” (FGD participant, intervention site)

Another important aspect underlined by several nurse-midwives in the intervention facilities was a gain in autonomy and the strengthening of their role in the center.

“I felt that the role of a midwife is no longer limited to making the detection of a pregnancy at risk, to leave the decision making to the doctor, [that] I work and do the paperwork and then the doctor takes the decision. I liked it that it is me now to take the decision.” (FGD participant, intervention site)

This autonomy affected also the doctors of the health center as they felt more involved in decision making.

“It is not only the midwife who thinks that she became important, even the general practitioners realized this. When they found a pregnant woman with a GDM they referred her. Now we take a decision [...]. We begin to conduct searches, we make contact with the endocrinologists, they tell us what to do. We have

the impression that we became half-endocrinologists. It is motivating. [...] And the women are satisfied [...]" (FGD participant, intervention site)

Finally, it is all about working as a team in the health facility to provide the best services to the patients.

"It is important [...] that everybody finds one's place and that the medical doctor doesn't think that the nurse or midwife takes his place. She completes his actions and they must work with a team spirit." (Key informant)

Discussion

Discussions with health care providers and key informants revealed that GDM screening and follow-up through the primary level of care in Morocco is an acceptable strategy, although it is facing several challenges. Lack of sensitization of pregnant women about GDM increases the educational responsibilities for ANC providers. Health professionals are often not familiar with GDM and have no notion of the difference between diabetes and GDM. This lack of knowledge particularly affected the collaboration of trained providers with the private sector and led to controversies in recommendations. The dilemma between the often unregulated private and the public sector and how to overcome this gap has already been described elsewhere [14]. However, our results pointed out that private sector providers adopted some of the public sector practices after initial resistance. This indicates that both do not work in isolation and that changes in the public sector can influence private sector practice.

Initial management of GDM consists of dietary counseling, and providers had to adapt their nutritional advice to the socio-economic background of women. Especially counseling poor women requires a certain amount of flexibility in recommendations, as some women cannot afford specific food items listed in nutritional guidelines. Respondents in our study underlined to advise women not to follow diet in isolation but to incorporate nutritional changes into their family meals. Involvement of the family in lifestyle changes may not only improve better adherence and diabetes control of patients but result in a better health of family members as studies related to diabetes type 2 have shown [15]. Particularly nurses and midwives have a core function in health education [16]. Thus, their access to women who are in charge of their family's nutrition opens a unique opportunity to counsel about a healthy lifestyle that is not only focused on the individual. Therefore ANC, the entry point of many women to health care, could play an increasing role in general health education and in the prevention of diabetes and other NCDs.

Nevertheless, adding more activities to the already high workload of primary health care providers may be counterproductive and result in a reduction of the quality of services [17]. Our findings revealed that the additional workload at the intervention sites often resulted in a provider-led re-organization of ANC services to account for the additional work charge of testing patients. However, service re-organization needs to be coupled with training of all members of ANC staff to enable a continuity in service provision if GDM screening and management would become integral part of ANC. The combination of practice re-organization and workforce development can furthermore have a positive impact on access to these services [18].

Delegation of tasks in chronic disease management in low-resource countries is practicable, given that nurses are trained using clear instructions to perform repetitive tasks and are supported by regular supervision [19]. Nurse-led diabetes management following protocols showed similar results when compared to care provided by doctors and was accompanied by a higher patient satisfaction [20,21]. The latter is an important aspect, as task shifting is often narrowed down as the solution to workforce shortages only. Client satisfaction is relevant for adherence to treatment and follow-up [22]. Empathy of providers has shown to increase satisfaction levels and compliance [23]. GDM diagnosis is often accompanied by patients' fears [24] and therefore requires a high degree of empathy to reduce anxiety. Studies have shown that nurses have a high capacity to provide empathic care [25,26]. Given their central role in the follow-up of uncomplicated pregnancies, nurses and midwives are therefore ideally positioned to comprehensively care for GDM affected women [27].

The focus on care rather than on cure renders an intervention attractive for nurses [28]. Provision of GDM screening and its initial management had a promotional aspect for the individual nurse, as it endowed her with a new decision-making power. According to the diffusion of innovation model an intervention will be adopted if it responds to a perceived need, has observable benefits, is simple to use and can be tried out (trialability) and adapted to local requirements [29]. Considering this intervention, above requirements were met as testing at the primary level of care was perceived an advantage as it enlarged ANC service offer, was simple to use, had benefits in terms of a reduction in delays in testing and management and it gave providers the liberty to adapt the activity to their schedule and to patients' availability.

An important role in the acceptability of the intervention played the motivation health care providers gained by providing screening and follow-up, which was reflected in a reported increase in self-esteem and recognition through peers and patients. According to Maslow's hierarchy of needs describing the causes for motivation in an ascending order [30,31], the intervention affected the three upper levels of a five-tier pyramid; social belonging, self-esteem and self-actualization. The gain in autonomy in performing the activities and taking decisions increased provider's intrinsic motivation, a phenomenon which is integral part of the self-determination theory [32].

However, our findings have to be interpreted with caution as they were introduced as a short term, study related intervention. Nevertheless, it indicates that involving ANC providers in a new intervention that broadens their offer of care and extends their decision-making autonomy within clear limits may not only increase the pride associated with their role, but also positively affect the trust between providers and patients. Although the additional task adds to the already high workload of health professionals, this seems to be counterbalanced by the gain in motivation. To sustain such motivation, official recognition to reward employees' efforts is a further step [33]. This has also been shown in a study from Tanzania indicating that recognition and appreciation of primary health care providers are important to sustain motivation [34].

Limitations

Health care providers at both intervention and control sites were involved in data collection for the study and received a small remuneration (equivalent of 20€/month) for the additional paperwork. Critics may consider this as incentive that may have influenced motivation of providers. However, the amount is relatively low in the Moroccan context and it can be doubted that such a small sum alone would have increased motivation. A further limitation to the findings is the possibility of social desirability bias during the interviews but our experience during regular supervision visits and information received from patients support reported findings.

Conclusions

In the Moroccan context studied, introduction of GDM screening and initial management was well accepted by ANC staff despite the additional workload it presented. The intervention serves as example for a feasible new strategy to extend the service offer in ANC with a potential to motivate primary level health care providers. Further research is required to explore if and how such interventions can sustain motivation in an environment that is continuously facing staff shortages and high individual workload.

List Of Abbreviations

ANC: Antenatal Care; GDM: Gestational Diabetes Mellitus; NCD: Non-Communicable Disease; FGD: Focus Group Discussion.

Declarations

Ethics approval and consent to participate: The protocol for the study was approved by the institutional review board of the Institute of Tropical Medicine in Antwerp, Belgium (Reference 1086/16), the Ethics Committee of the University Hospital Antwerp, Belgium (Registration B300201628508) and the Ethics Committee for Biomedical Research at Mohammed V University, Rabat, Morocco (Dossier 83/16). Written consent was provided by all participants.

Consent for publication: Not applicable

Availability of data and material: All data generated or analysed during this study are included in this published article. Datasets used are available from the corresponding author on reasonable request.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: BU conceived the study, was involved in data collection and analysis and drafted the manuscript, TL coordinated the fieldwork, assisted in data collection and interpretation, BA contributed to the study design, data collection and analysis, VDB assisted in the study conception, and VDB and WVD provided relevant input into the writing up of the manuscript and critically revised the paper. All authors read and approved the final version of the manuscript.

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