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Experiences of women, hospital clinicians and general practitioners with gestational diabetes mellitus postnatal follow-up: A mixed methods approach

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ABSTRACT

Problem: Postnatal screening rates to detect type two diabetes following gestational diabetes are low. The quality of communication is an important element to consider in developing targeted strategies that support women in completing recommended follow-up care.
Aims: To explore the communication perspectives, practices and preferences of women, hospital clinicians and general practitioners, to determine strategies that may promote completion of recommended postnatal GDM follow-up, in Queensland Australia.
Method: We used an exploratory, three-phase, mixed-methods approach, interpreted through intergroup communication theory. Phase one: convergent interviews explored perspectives of the communication experience in GDM care among new mothers (n = 13), hospital clinicians (n = 13) and general practitioners (n = 16). Phase two: a retrospective chart audit assessed current practice in postnatal discharge summaries of women (n = 86). Phase three: an online survey identified the preferences of general practitioners and hospital clinicians who provide maternity care in Queensland. Triangulation of the findings from the interviews, audit and surveys was used to clarify results and increase the robustness of the findings.
Results: Three themes: Seeking information, Written hospital discharge summary (discharge summary) and Clarity of follow-up requirements, provide direction for pragmatic strategies to promote follow-up. Practical recommendations include continued discussion about care with women from the point of GDM diagnosis into the postnatal period; discharge summaries that give primacy to diagnosis and ongoing treatment; and provision of explicit directions for recommended testing and timing.
Implications: This research informs seven practical recommendations to help promote completion of recommended postnatal GDM follow-up.

Abbreviations: T2DM, type two diabetes mellitus; GDM, gestational diabetes mellitus; CAT, communication accommodation theory; RP, recommendations for practice; SIT, social identity theory

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1. Introduction

In Australia 12% of pregnancies are complicated by gestational diabetes mellitus (GDM) [1]. Risk factors for GDM in pregnancy include a history of elevated blood glucose levels in pregnancy, age >40 years, ethnicity (Asian, Aboriginal Maori, Torres Strait and Pacific Islanders, Middle Eastern, non-white African), family history of diabetes mellitus, pre-pregnancy body mass index (BMI) >30 kg/m^2, previous baby >4500 g birth weight, history of polycystic ovary syndrome [2]. GDM affects both maternal and foetal health during the pregnancy and beyond. The diagnosis of GDM has been identified as the single strongest predictor of women developing type two diabetes (T2DM) and also poses a risk for long term cardiovascular morbidity [3]. Worldwide rates of type two diabetes mellitus are rising exponentially, representing a major public health problem affecting developed and developing countries [4,5]. At a population level, women diagnosed with GDM represent an ideal group for promotion of the benefits of early interventions that are known to delay or prevent progression to T2DM [6,7].

GDM raises the risk level of the pregnancy, and therefore requires maternal referral to specialist multidisciplinary care, typically located within hospital-based maternity clinics. For women who undertake shared care (where care is shared between the general practitioner or GP and the maternity hospital), the diagnosis of GDM and subsequent referral for specialist management means that the remainder of antenatal care is managed, in most cases, solely by the hospital. This interrupts GP continuity of care during the pregnancy; although GPs resume their role as primary carers following the birth and discharge from hospital.

In Australia, 97% of births and early postnatal care occur in the hospital setting [1]. In Queensland the average postnatal stay is 2.6 days, with an average of 2 days for public patients (including shared care models) to 4 days for private patients in private hospitals [8]. Women and newborns are usually discharged from the hospital to home. Some women return to the maternity hospital for GDM follow-up. However, for most, the GP will conduct routine postnatal checks for mothers and babies at 6–12 weeks. GDM follow-up is recommended at these times, in addition to routine postnatal mother and baby health checks. Transfer of clinical responsibility back to the GP as the primary health provider is communicated via discharge summary, which is created by hospital maternity clinicians when the mother and baby are discharged from hospital.

This discharge summary is the main communication tool between the hospital and GP. The document should include details about the hospital admission, birth, and the health of mother and baby, along with plans for ongoing postnatal care and additional follow-up, such as GDM care [9].

The need for, and benefits of, GDM follow-up are well established and corroborated by local and international guidelines [2,10]. Postnatal GDM follow-up in Australia is based on Australian Diabetes In Pregnancy criteria, and states that all women diagnosed with GDM, unless clinically contraindicated, should complete a 75 g 2-h OGTT, preferably between 6 and 12 weeks post-partum [2].

GDM postnatal follow-up screening is supported by clinicians, as it facilitates early management strategies to delay or manage T2DM [11]. Nevertheless, completion of GDM specific postnatal screening is low, highly variable, and has long been considered a "missed opportunity" to assess the return to non-pregnant glucose regulation as well as health promoting strategies for women following GDM [12]. Despite this consensus, postnatal GDM follow-up completion rates remain low [13]. Interventions including patient and clinician reminders have met with limited success [14]. The reasons why women do not complete screening are not well understood [5]; but the quality of health communication is implicated as an important feature in the promotion and completion of recommended GDM care.

Nevertheless, the literature shows a dearth of research about the role of communication in completion of postnatal GDM care. Research about GDM follow-up has focused on non-modifiable factors (age, ethnicity, parity, education level); this approach has provided few clinically useful strategies [5]. To explore the knowledge gap around communication and completion of recommended postnatal GDM care, a different approach is necessary. We selected an intergroup communication framework for this study.

Intergroup communication theoretical frameworks have been applied to other maternity services and health care, including patients and clinicians, [15,16] but to the best of our knowledge our research is the first to examine patients' and clinicians' perspectives of GDM care in this way [17,18]. This research employs an intergroup theory, Communication Accommodation Theory (CAT) [19].

2. Methods

A mixed-methods approach [20] was used, consisting of three sequential phases, with each set of results and methods informing subsequent phases. Table 1 summarises research questions, sample recruitment, data collection and analytic approaches.

We triangulated data sources and methods in order to affirm the validity of each of the phase results [21]. Triangulation also enabled us to identify pragmatic strategies that may support the completion of GDM postnatal follow-up.

Phases two and three are reported here for the first time, and provide a unique contribution to understanding the current communication practices and preferences implicated in GDM follow-up.

2.1. *Convergent interviews*

Phase one explored women's and clinicians' perspectives of GDM postnatal follow-up. Most findings from phase one interviews have been published, and shed light on our understanding of women's [17] and clinicians' perspectives [18] of GDM postnatal follow-up.

Table 1 – Research summary table.

Phase	Research question	Sample/s	Recruitment	Data collection	Analytic approach	Ethical approval
One Qualitative Interviews (a) women with GDM	What are the communication experiences women with GDM and postnatal GDM follow-up?	Purposeful sampling to identify women diagnosed with GDM and participating in maternity shared care at the tertiary referral hospital where the research was conducted	Recruited at the study hospital by CMK who provided verbal and written information about the research	Convergent interviews explored participants' communication experiences with GDM and postnatal follow-up. Interviews with women were conducted between March 2013 and January 2014. Clinician interviews were conducted between December 2012 and July 2013	Data analysis was conducted on all reviewed transcript data was then analysed with Leximancer® (v4, 2011) automated content analysis software to generate themes and concepts uniquely grounded in the research data. Findings were interpreted with CAT to establish an intergroup assessment of communication events	The Human Health Ethics Research Committee at the study Hospital Mater Health Services Human Research Ethics Committee (MHS REC) and Governance Committee (1904 M.03 September 2012) and University of Queensland (2012-SOMILRE-0031.02 August 2012)
(b) clinicians (general practitioners and hospital clinicians) caring for women with GDM	What are the communication experiences and processes of hospital clinicians (midwives, medical, allied staff) and general practitioners who provide postnatal GDM care	Purposive sampling was used to identify clinicians who provided care to women diagnosed with GDM	Recruited at the study hospital and via email and phone by CMK who provided verbal and written information about the research			
Two Quantitative Retrospective Chart Audit	What is the current practice in communicating GDM care in the hospital discharge summary?	A retrospective chart audit of discharge summaries was conducted for women diagnosed with GDM, who gave birth during a 12 week period	Chart request of all women diagnosed with GDM recorded in existing medical records and gave birth 1 December 2012–28 February 2013 at the study hospital	Review of all available medical records of women known to have a diagnosis of GDM in their current pregnancy at the study hospital were audited. Audit conducted July 2014 – August 2014	Descriptive data were used to calculate the means and percentages of discharge summaries and content about GDM diagnosis and follow-up	The Human Health Ethics Research Committee at the study Hospital Mater Health Services Human Research Ethics Committee (MHS REC) and Governance Committee (1904M.03 September 2012) and University of Queensland (2012-SOMILRE-0031.02 August 2012

Table 1 – (continued)

Phase	Research question	Sample/s	Recruitment	Data collection	Analytic approach	Ethical approval
Three Quantitative Survey (a) general practitioners (b) hospital clinicians	What are the communication preferences of both hospital based clinicians and general practitioners in communicating GDM follow-up care?	Targeted sampling of clinicians who provide care to women with GDM	Clinicians were invited via two existing clinical networks; The Statewide Maternity and Neonatal Network and GP Connect, Queensland Australia The survey, and one reminder email was sent to improve response rates	Online clinician's survey accessed via the hyperlink included in the survey invitation. The survey was conducted between June 2014 and October 2014	Data analysis included descriptive statistics to analyse item responses. All data were included in the analysis, and no replacements were made for any missing data. Analysis of variance (ANOVA) was conducted and significant results checked with Bonferroni multiple comparisons tests. Chi-square analysis was used to compare the categorical response distributions between independent groups. All statistical analysis was conducted with Graph Pad Prism software (version 6.04, 2014). The level of significance was set at alpha < 0.05. Content analysis of free text comments was conducted to supplement the meaning of survey responses	The Human Health Ethics Research Committee at the study hospital The Mater Health Services Human Research Ethics Committee (MHS REC) and Governance Committee (HREC/13/MHS/169); and amending earlier ethics application at The and University of Queensland (2014-SOMILRE-0109-Ammendment)

In keeping with conventions of rigour in qualitative research [22] sample size was not predetermined; rather, interview data collection ceased when no new insights into the experiences and perceptions of participants emerged [23].

2.2. Audit

Phase two involved an audit of written communication in the study hospitals. Data collection employed existing validated audit forms for assessing discharge summaries [24]. Specialist maternity data were collected using established data reporting requirements of participating hospitals [8].

2.3. Survey of maternity care clinicians

Phase three involved a statewide online survey about the preferences of hospital clinicians and GPs for communicating postnatal care in the hospital discharge summary. Prior to distribution, face and content validity of items included in the survey were confirmed by clinicians and researchers, and a pilot survey was conducted with maternity clinicians and general practitioners.

The online survey was conducted with a convenience sample of Queensland general practitioners and hospital-based clinicians who provided care to women with GDM. Confirmation that recipients of the survey were active providers of maternity care in Queensland was done via an initial screening question. The invitation to participate was distributed electronically, on behalf of the researcher, to GPs and the Queensland Maternity and Neonatal Clinical Network. Calculation of the overall response rate was not possible given the sampling method and distribution of the survey.

2.4. Data analysis

2.4.1. Qualitative data analysis

Meticulous attention was paid to rigour in all phases of the study. Interviews were audio recorded with consent and transcribed verbatim. As a quality check process, participants were provided with their transcripts to update if required. Reviewed transcripts were analyzed using Leximancer® (v4, 2011) automated content analysis software, generating themes and concepts uniquely grounded in the research data. Findings were interpreted via CAT where appropriate. We provide extracts to illustrate themes which emerged from the qualitative data.

2.4.2. Quantitative data analysis

Descriptive statistics were used to summarise the characteristics of discharge summaries in relation to content about GDM diagnosis and follow-up. Scores were assigned if recommendations about GDM were present in each discharge summary; scoring one point each, maximum score 6.

Data from the online survey were cleaned. All data were included in the analysis, and no replacements were made for any missing data. Descriptive statistics were used to summarise item responses. Analysis of variance (ANOVA) was conducted and Bonferroni multiple comparisons tests were used to set significance levels. Chi-square analysis was used to compare the categorical response distributions between independent groups. The level of significance was set at alpha <0.05. Statistical analysis was conducted with Graph Pad Prism Software (version 6.04, 2014).

2.5. Ethical approval

Obtained prior to each phases (see Table 1).

3. Results

3.1. Convergent interviews: perspectives of women and clinicians

Phase one involved 37 interviews, women diagnosed with GDM (n = 13), and clinicians (hospital clinicians and general practitioners) (n = 24) who provide care to women with GDM. Women's ages ranged 17–32 years of age; nine women identified as Caucasian and four as Asian. Two had completed secondary education to Year 12 and all other women had completed tertiary education.

A precis of phase one findings is presented below to provide context and link with later phases. The studies of women's [17] and clinicians' perspectives [18] have been published; full details are available in the original articles.

Women's perspectives

Five themes emerged from the women's experiences, all concerned with obtaining information: diagnosis of GDM, seeking GDM information, accessing information from experts, need for postnatal GDM follow-up, and completing GDM follow-up.

Results were interpreted using Communication Accommodation Theory (CAT) to explore whether and how the information needs of women were accommodated. Women's interpretation of communication events influenced their knowledge, perception and motivation to complete recommended postnatal follow-up.

Diagnosis of GDM: All participants described the time when they learned of their diagnosis of GDM. For many, this was an unanticipated aspect of their pregnancy, and they recalled being shocked.*When I first found out from the doctor it was quite shocking and they tell you all the risks and what can happen to your baby and stuff and you know really was quite blind as to what to do at that point (W13)*

Seeking GDM information: Women often sought information about GDM independently when their needs were not accommodated at diagnosis. Anxiety about the lack of opportunity to access information or to discuss and clarify individual concerns was reported. This abated once self or other education occurred with women feeling more positive.

I just came out of the appointment after I had seen her and she told me feeling really, really unclear about everything (W3)

Accessing information from experts: Many women experienced delays accessing specialist GDM services at the maternity hospital. Information needs were again under-

accommodated. Women reported negative impacts with delays until their hospital appointment, including guilt and worry about harming their baby.

I felt like I was left for a long time without any information... it would have been good to get information earlier on (W5)

Need for postnatal GDM follow-up: All women were aware of the need to follow up their GDM postnatally. Women used information provided by clinicians to interpret the seriousness of GDM and to decide what value they should personally place on postnatal follow-up. When clinicians' behaviour emphasised (or failed to emphasise) the importance of follow-up, women prioritised the need for follow-up accordingly.

The GDM was very spoken about but as soon as [Baby] was born it was like "no, she's fine; there is nothing too wrong with her. Don't worry about it". So I was like "Oh, she is OK?"- "Yes". So it [GDM] was something I was carrying through the pregnancy (W2)

Completing GDM follow-up: Women's perceptions about who was responsible for instigating postnatal GDM follow-up varied considerably. All participants made at least one postnatal visit to their GP, most women noted that GPs were not involved in providing specific management for GDM.

I actually reminded her [GP] on my 6 week check-up to get my diabetes [follow-up test] done. And she did all my forms and was like "what do you need done?" (W2)

Women remarked that GPs appeared to have problems accessing information about GDM management.

I don't know if they get much information at all. Because my GP had a lot of trouble getting information. So I do not think she got information at all. She was trying to get some and having trouble – I figure it must have been difficult (W5)

Overall, women confirmed that their communication needs about GDM and the implications for themselves and their infants were not met. Women reported seeking information from the time of diagnosis through to the immediate postnatal period in the hospital and following discharge. They relied on clinicians to maintain talk about GDM to reconfirm their perceptions about the seriousness of GDM follow-up and to prioritize and complete GDM testing.

Clinicians' perspectives

The clinicians' perspectives were gathered from GPs in individual interviews (n = 10) and one focus group (n = 5), and from individual interviews with hospital clinicians (medical, midwifery and allied health, n = 13). Hospital clinicians included senior and junior staff in medical, nursing, midwifery and allied health groups. The largest group of hospital respondents (46%) were aged 30–39 years and worked more than 32 h per week. Eighty-five percent of hospital clinicians were female. The largest group of GPs (37%) were aged 30–39 years and worked more than 32 h per week. Seventy-five percent of GPs were female.

Thematic analysis identified six themes, and for most themes very different perspectives were evident between GPs and hospital clinicians. Two themes, GDM women and postnatal checks, were shared. General practitioners revealed themes relating to discharge summaries and follow-up guidelines. In contrast, hospital clinicians' themes related to GDM antenatal care and specialist clinics.

GDM Women: Clinicians revealed a sense of managing group identities, with experts and support actors. Features of an intergroup environment, with reference to distinct group identities, first appear when GPs inform women of their GDM diagnoses. GP's roles changed from primary antenatal maternity care provider to more of a support role to the hospital.

If they [hospital] can reinforce our role and ongoing role, OK. So that when women come back they say "The specialist said you would be doing this, and you would help with that that", and it is getting that right. It is getting that right so it is not just "you will do this"- just want me to do that to save themselves the work versus you will do that because you are a valuable, intelligent educated, motivated member of my team. (GP2)

Postnatal checks: Hospital clinicians believed that women should be responsible for postnatal GDM follow-up, and that their responsibility was to educate women about follow-up.

And really, I think at the end of the day patients need to take some responsibility for their health care as well, because essentially they are at the centre of it and try to facilitate it (HMO5)

Conversely, GPs agreed that postnatal care and follow-up was part of their role, where they relied on advice and good communication from hospital clinicians. Providing advice about follow-up plans was seen as part of the hospital clinicians' responsibilities.

Specifically, for gestational diabetes, good communication with results and what needs to be followed-up. But then it is the GP role, our domain to follow that up. [GP6]

***Discharge Summaries*:** In most cases, GPs perceived that hospital discharge summaries contained far too many details that were irrelevant to GPs by the time of the postnatal check. GPs indicated that they found salient information, including recommendations for care, missing or hard to find.

I personally hate those discharges (summary documents) they are impossible. I mean something much more succinct – a summary. They have obviously printed the entire record! (GP11a)

GPs' preference was to receive specific advice about GDM care from the hospital at the beginning of the discharge summary document; one participant said that this had been provided by a former GP.

This (discharge summary) was just perfectly laid out, and it was just because he had been a GP. (GP3)

It was suggested this would facilitate completion of recommended GDM follow-up care.

Follow-up Guidelines: GPs indicated some confusion about how to follow up guidelines for GDM management and a reluctance to take a stand about GDM follow-up while debate and confusion about guidelines remain. In this case, GPs suggested that hospital clinicians should have evidence-based protocols that they provide as a plan, along with recommendations for postnatal care.

Especially with things changing [GDM diagnostic criteria] and in my situation, not doing a lot (maternity share care), I would like to know what I am meant to do to be fairly clearly guided as to what to check when. (GP8)

GDM antenatal care: Hospital clinicians thought that their own responsibilities centred on the antenatal management of GDM and education about the need to complete postnatal follow-up. This viewpoint distanced them from the logistics of postnatal follow-up.

The ladies today could tell me what they had planned to do. That they planned to see their GP and they know they had to see them in 6 – 8 weeks' time to have an OGTT. (HMID7)

Specialist clinics: GPs sometimes used strong metaphors to illustrate that women with GDM, once referred to the hospital seem to be taken over by the hospital and no longer visible to the GP. This included being "*kidnapped*" *(by hospital name). [GP3]*" or "*just disappear into the ether*" *[GP4]*

One of the issues as a GP is that women disappear, so that as a GP who does provide maternity share care if a woman is diagnosed with GDM then that will be pretty much the last I see of her for her pregnancy (GP2)

GPs stated that they are not treated as equal partners with the hospital, and they considered the lack of response following the referral as rude.

It would be polite to get something back [from hospital] when we refer. [GP7]

Overall, for clinicians who care for women with GDM, follow-up was described in terms of communication where GPs are information seekers whose communication needs are not met by hospital clinicians.

In summary, according to CAT, both new mothers and GPs indicated that their communication and information needs about GDM were underaccommodated or not sufficiently addressed.

3.2. *Audit of discharge summaries*

Phase two consisted of a three-month retrospective chart audit that identified 85 discharge summaries for women diagnosed with GDM in their current pregnancy. A discharge summary was available for 93% (n = 79), and not found or unavailable in 7% (n = 6) of cases.

In the 79 available discharge summaries, there was an absence of documentation of GDM diagnosis in 11% (n = 9) cases. GDM diagnosis was recorded in 89% (n = 70) cases, with information most commonly located (93%, n = 65) on the last page of the document. GDM follow-up advice was provided in 14% (n = 10) of cases. None of the discharge summaries included comprehensive advice as per ADIPS recommendations that included the timing, specific test as oral glucose test and the need for ongoing surveillance.

In summary, the quality of recorded GDM information was highly variable. Contrary to expectations, no discharge summary in this phase included complete GDM follow-up advice, and discharge summaries rarely provided adequate information for the doctors providing postnatal care. While the majority of summaries recorded a GDM diagnosis, detailed testing recommendations to facilitate ordering of screening tests were not included.

3.3. *Survey of clinicians*

Phase three involved an online survey of clinicians, both general practitioners and hospital clinicians providing GDM care. As the survey was distributed on the researchers' behalf via clinical networks, the overall response rate could not be determined. Fig. 1 details the survey respondents who completed the online survey; participants included general practitioners and hospital clinicians (doctors, nurses and midwives).

The average age of general practitioners (n = 30), was 45 years; most were females with an average of 22 years clinical experience. There were 30 hospital doctors with an average age of 49 years; half the respondents were female, with an average of 21 years clinical experience. There were 74 hospital nurses and midwives; nearly all were female, with an average age of 48 years and an average of 22 years clinical experience. Data were excluded if the demographic information was not provided.

Participants rated the importance of the discharge summary on a five-point Likert-type scale. Significant differences were observed between GPs and hospital clinicians about the importance of the discharge summary ($p < 0.01$), with hospital clinicians judging the summary as more important for postnatal care than GPs.

Further differences indicated that GPs preferred less detailed information compared to hospital clinicians when there was an intrapartum complication ($p < 0.001$). GPs also preferred less detailed information than hospital doctors for long-term GDM management ($p = 0.02$), while the perceived level of detail was even greater between GP (less detail) and midwives (more detail) ($p < 0.001$). GPs also preferred less detail about the management of future pregnancies compared to hospital clinicians ($p < 0.006$; see Fig. 2). Respondents otherwise agreed that more detailed information was better for complicated cases, and less detailed information preferable for uncomplicated cases.

More than 96% of clinicians were aware of the need for specific postnatal GDM follow-up. Ninety percent (n = 27) of doctors, 80% (n = 24) of GPs and 74% (n = 53) of midwives were confident in ordering GDM follow-up. However, none of the

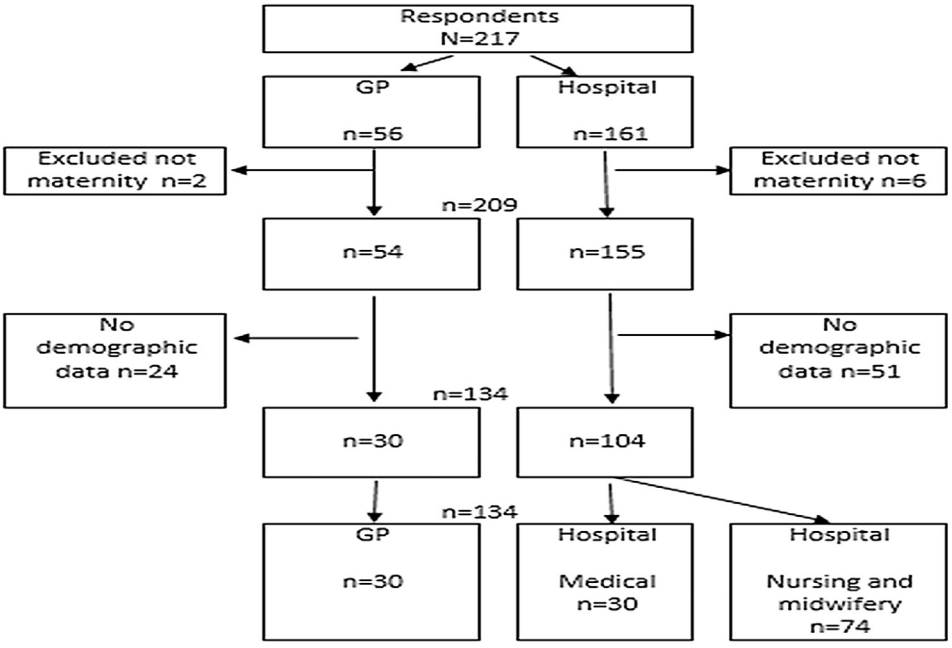

Fig. 1 – Survey respondents.

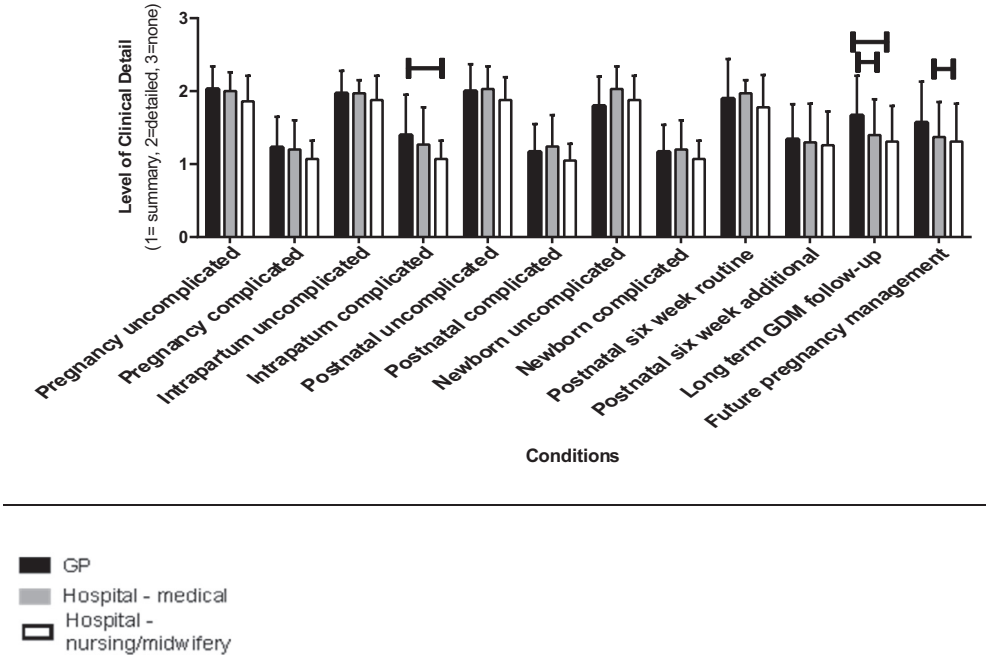

Fig. 2 – Clinicians preferred level of detail in postnatal discharge summaries. Legend: Horizontal bars indicate statistical significant comparisons between groups (p = 0.05).

respondents reported providing comprehensive GDM follow-up advice according to best practice guidelines.

Eighty-three percent (n = 25) of GPs indicated that during the postnatal appointment they relied on the discharge summary to determine whether a woman had a diagnosis of GDM; 73% (n = 22) utilized existing clinical records, and 70% (n = 21) of GPs determined GDM status by asking the mother. However, forty-three percent (n = 13) GPs relied on women to raise their GDM diagnosis, and eight percent (n = 8) referred to the infant's personal health record to determine a maternal complication of GDM.

Overall, survey findings showed that clinicians agreed about the importance and level of detail required in the discharge summary. Although the need for postnatal GDM

follow-up was almost universally understood, it did not extend to the provision of details of recommended follow-up screening tests.

4. Triangulation of the three phases and discussion

Triangulation of the qualitative and quantitative phases was undertaken to increase the methodological rigor and confirm the findings across the phases. Three major themes were identified: (1) seeking information, (2) discharge summary, and (3) clarity of follow-up requirements. These are described and interpreted below.

Theme One: Seeking information appeared initially in interviews with women and GPs, then again in audit and survey results. GPs and women reported their communication and information needs were not met at diagnosis of GDM and later at the time of postnatal follow-up.

Lack of information at diagnosis may be the result of the GDM diagnosis itself; women reported being surprised, and were not prepared to ask questions about what GDM meant for them or their baby. Following the revelation of the diagnosis, the focus of the appointment switched to the logistics of referral to the hospital for ongoing pregnancy management of GDM. Thus, the opportunity to discuss GDM concerns was not prioritised.

From an intergroup communication perspective, these findings indicate that information and communication preferences differ between groups. GPs showed a preference for a detailed level of clinical information in the discharge summary about additional GDM follow-up tests and ongoing follow-up. Hospital clinicians, in contrast, preferred a summary level of detail. The chart audit indicated that the discharge summary was not always available or often did not include required information and discharge plans for GDM care in a format that supported the postnatal care provider. Survey results indicated clearly that different groups of clinicians (GPs vs hospital clinicians) preferred different levels of information in the discharge summary. GPs believed that their information needs were not met, and that this was likely to influence their interactions with women.

The findings are supported by other research in the medical setting that show how miscommunication has a negative impact on the safely and quality of patient care [15,16,25]. For women, miscommunication may start when they are first diagnosed with GDM. They are often shocked by the diagnosis and not always ready to ask questions about the diagnosis or what this means for themselves, their baby or the treatment required.

A feature of communication that is often underrecognised and undervalued is clinicians' roles in promoting GDM follow-up. Women need consistent information from clinicians at GDM diagnosis and during management and postnatal follow-up. Women rely on clinicians' continued communication about GDM and use this information to interpret the seriousness of GDM and what priority to place on completing follow-up care. Women expect that if GDM follow-up is a health priority, their clinicians will remind them about follow-up. The health belief model, in the context of GDM [26], also posits that people's health perceptions are the greatest influence on their health behaviour, in this case completion of GDM follow-up; likewise, CAT posits that perceptions are the strongest influence on future behaviour. These findings are also supported by a recent report about clinicians' preferences for the formatting of the electronic health record (eHealth). The benefits of using a standardised format for eHealth discharge summaries is recommended as a means for reduction in human error [27,28].

Theme two: Discharge summary was a theme identified again in interviews, the audit and the survey as important for postnatal care. The discharge summary was recognised as the major tool between the hospital and primary health care providers for communicating GDM care requirements.

Hospital clinicians and GPs had different perspectives about the discharge summary. GPs noted that hospital discharge summaries were not always provided and did not always include pertinent information such as GDM diagnosis. Information was not always easy to find and seemed to be buried in a long document, amongst issues that had been resolved in the hospital and so were no longer relevant. GPs wanted plans for follow-up specified at the beginning of the discharge summary, where it was easily located and actioned in the postnatal appointment. Audit findings supported the findings of interviews with GPs, who reported that discharge summaries were often missing, failed to mention a GDM diagnosis, or failed to outline appropriate follow-up.

In the survey, GPs identified the discharge summary as the main tool to determine women's GDM status at the postnatal appointment. GPs reported that they relied on discharge summaries, but the summaries were not always provided in time for the postnatal appointment. In addition, they were not user friendly and did not contain relevant information. GPs in the interviews identified the importance of the format of the discharge summary document to support identification and provision of recommended postnatal care.

It is crucial for the hospital discharge summary to communicate clearly and concisely the plans for postnatal care, including test details. Research around discharge summaries in the maternity setting confirms that GPs often do not receive the summary in a timely manner, before the woman presents [27]. Providing women with a copy of their discharge summary prior to discharge may promote review of the document and its availability at the postnatal appointment.

However, our findings also showed that the preferred format of these documents appears to vary according to group. Hospital clinicians expressed a preference for a ship's log of events, recorded sequentially through the patient stay, with recommendations for follow-up care given last [28]. On the other hand, GPs have a preference for information to be presented as an action list, with recommended follow-up at the beginning of the document [28]. The introduction of eHealth systems may provide the opportunity for information to be presented in different output styles, in order to accommodate different recipient requirements. According to communication accommodation theory the provision of information in the preferred user format is interpreted favourably by recipients [15]. This simple format change could improve the quality of communication between hospital and primary health care providers.

Table 2 – Recommendations to support the completion of GDM postnatal follow-up.

1.	Women should be provided with written information about what GDM means at the time of their diagnosis
2.	Clinicians should continue to discuss the need for GDM follow-up following the birth
3.	Women should be advised to book a long postnatal appointment to ensure adequate time for GDM follow-up
4.	Hospital discharge summaries should be written for all women with GDM
5.	Women should be given a copy of their discharge summary
6.	Discharge summaries should include information about a woman's GDM diagnosis
7.	Plans and advice for postnatal GDM care should be prioritised at the beginning of the discharge summary

Theme three, clarity of follow-up requirements. Women's interviews revealed that they were aware that their GP seemed to lack information about postnatal follow-up for their GDM. Women were understanding about their GP's frustrations, as the hospital had managed their GDM following referral at diagnosis. Again, these findings were substantiated by the chart audit, where discharge summaries were not available for all women with GDM and details were often located on the last page of long documents. Although, according to the survey, GPs and hospital clinicians supported the inclusion of specific details of GDM testing requirements, the audit showed that in practice, this level of detail was not reflected in the current discharge summary document. None of the audited discharge summaries included specific recommended GDM care as specified by ADIPS guidelines; this is likely to influence the quality of health care for women with GDM in the postnatal phase.

Additionally, lack of clarity and ease in locating follow-up requirements meant that there was not enough time in a short appointment to provide newborn, mother and additional recommended care requirements [29]. As a result, care was rushed or exceeded booked times and impacted on the already busy clinic.

In summary, this research employed an intergroup perspective to explore the communication and information priorities for GDM follow-up of people in different groups of stakeholders. Our findings highlight the importance of recognising the ubiquitous influence of communication in the provision of quality health care. Communication accommodation theory contributes to better understanding of the complexities in this area, which result in low rates of completed postnatal care. Improving the quality of communication specifically in areas of under-accommodation [30] reported by GDM women and clinicians may resolve some of these issues.

Using a mixed methods approach, this research provides direction for seven practical recommendations that may support the completion of recommended GDM follow-up care (Table 2).

4.1. *Strengths and limitations of the research*

To our knowledge this is the first research to use a mixed-method, intergroup communication approach to explore the conundrum of postnatal GDM follow-up. The mixed method design overcomes limitations of a single study design. Interviews included perspectives of women and clinicians from a single study site; findings may not be generalizable beyond this setting. The audit represented a snapshot over a three-month period, in a single study setting. The survey was distributed electronically via well-established clinical networks, but there are likely to be clinicians who were not connected to these networks or not able to access electronic survey distribution. For this reason and because we could not determine a response rate, the external validity of the survey sample may also be questioned.

To overcome the limitations, triangulation and integration of findings from each phase supports the generalizability of findings, and has resulted in a series of novel practical strategies to promote completion GDM follow-up. Completion of this exploratory work provides further research opportunities to expand on the context beyond GDM care. Future research is warranted to develop systems and processes to support clinicians in the implementation of these practical recommendations and assess the influence of these on completion of GDM follow-up care.

Although this study was undertaken in the Australian context the findings may be transferable to other settings. GDM follow up and health care communication are global concerns [28] The impact of communication is likely to influence GDM follow-up in other jurisdictions in similar ways to those we found. Of course, each health sector has its own characteristics, thus the form and content of discharge summaries change across contexts. Nevertheless, the same principles apply. Our findings have generated practical principles, which may assessed by local experts for applicability and then tailored to the specific setting.

5. Conclusion

This research clearly identifies the importance of understanding intergroup communication in order to improve the quality of care that women receive for GDM follow-up in the postnatal period. It has informed the development of practical recommendations that may improve rates of follow-up whereby effective communication between clinicians and women with GDM is vital to support completion of recommended postnatal GDM care.

Statement of significance:

Problem: Completion of postnatal gestational diabetes mellitus follow-up is an important public health strategy to prevent or delay progression to type two diabetes.

What is known: Despite awareness of the benefits of completing recommended care, completion rates are low, with screening often a lesser priority for women in the postnatal period than the baby's health.

This paper adds: Triangulation of findings from a three-phase approach to provide unique insights into root cause health communication issues in the postnatal follow-up of women with GDM. We provide new and practical strategies for midwives and health care professionals to support women to complete recommended postnatal gestational diabetes mellitus care.

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Conflicts of interest

No conflict of interest to declare.

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