ABSTRACT

Objective To investigate whether the use of a patient decision aid (PDA) for insulin initiation fulfils its purpose of facilitating patient-centred decision-making through identifying how doctors and patients interact when using the PDA during primary care consultations.

Design Conversation analysis of seven single cases of audio-recorded/video-recorded consultations between doctors and patients with type 2 diabetes, using a PDA on starting insulin.

Setting Primary care in three healthcare settings: (1) one private clinic; (2) two public community clinics and (3) one primary care clinic in a public university hospital, in Negeri Sembilan and the Klang Valley in Malaysia.

Participants Clinicians and seven patients with type 2 diabetes to whom insulin had been recommended. Purposive sampling was used to select a sample high in variance across healthcare settings, participant demographics and perspectives on insulin.

Primary outcome measures Interaction between doctors and patients in a clinical consultation involving the use of a PDA about starting insulin.

Results Doctors brought the PDA into the conversation mainly by asking information-focused ‘yes/no’ questions, and used the PDA for information exchange only if patients said they had not read it. While their contributions were limited by doctors’ questions, some patients disclosed issues or concerns. Although doctors’ PDA-related questions acted as a presequence to deliberation on starting insulin, their interactional practices raised questions on whether patients were informed and their preferences prioritised.

Conclusions Interactional practices can hinder effective PDA implementation, with habits from ordinary conversation potentially influencing doctors’ practices and complicating their implementation of patient-centred decision-making. Effective interaction should therefore be emphasised in the design and delivery of PDAs and in training clinicians to use them.

INTRODUCTION

Shared decision-making (SDM), which involves doctors and patients exchanging information, deliberating on treatment options and reaching a mutually accepted decision, is widely considered the ideal treatment decision-making model. In contrast with paternalistic or informed decision-making, SDM emphasises partnership between doctor and patient, which is particularly significant in managing chronic illnesses such as diabetes, as patient self-management plays a crucial role. One means of implementing SDM is using patient decision aids (PDAs). These are designed to support treatment decision-making by providing patients with evidence-based information on their illness and treatment options in print, DVD or digital form. They can also help ‘create a conversation’, in which patients can seek clarification on information and discuss concerns, values and preferences.

Research on PDA use has identified doctors’ practices and these include giving...
fewer details about treatment to older or less-educated patients,\(^8\) dominating discussions\(^9\) and not using PDAs as prescribed, by neglecting to use them, providing inaccurate information or using PDAs to support personal biases.\(^10\)\(^11\) Although Tiedge et al\(^1\) conclude that the flexible use of PDAs encourages discussion,\(^12\) only a few studies describe how doctors and patients use PDAs in consultations\(^8\)\(^12\) and these tend to overlook the collaborative nature of interaction, for example, by using quantitative methods,\(^8\)\(^11\) or focusing only on doctors.\(^11\)\(^15\)

Qualitative methods of interaction analysis, such as conversation analysis (CA), have been used to examine how doctors and patients jointly perform social actions through talk in various clinical contexts.\(^13\)\(^14\)\(^16\)\(^17\) By analysing talk as it unfolds in consultations, CA research has identified patterns of doctor–patient interaction,\(^14\)\(^15\) helped operationalise patient participation and shared decision-making\(^18\)\(^19\)\(^20\)\(^21\)\(^22\) and produced findings applicable in medical practice and training.\(^22\)\(^25\)

In this study, we draw on the tools of CA to explore the way doctors and patients with type 2 diabetes use a printed PDA for decisions about insulin. By examining doctor–patient talk in different patient contexts, we hope to extend the discussion on PDA use beyond doctors’ practices to include the crucial but often overlooked role of the patient. Our objective is to investigate whether the use of the PDA for insulin initiation fulfils its purpose of facilitating patient-centred decision-making through identifying how doctors and patients interact when using the PDA during primary care consultations.

**METHOD**

**Setting**

The data were collected during a project to develop and test a PDA about starting insulin for patients with type 2 diabetes. Guided by the Ottawa Decision Support Framework\(^24\), the 13-page PDA covers patients’ concerns; comparison of treatment options; assessment of patient knowledge and values clarification, and finally, prompts a decision if patients are ready. Patients can engage with the content, checking options or making notes about the decision itself is made with the doctor. In line with the CA practice of analysing data in a common language (eg, English), this paper reports on single-case analyses of doctor–patient consultations in English. Consultations with other HCPs were excluded in view of their different roles in decision-making, in that nurses and pharmacists may use the PDA to counsel the patient, but the treatment decision itself is made with the doctor. In line with the CA practice of analysing data in a common language (eg, English), this paper focuses on consultations conducted mainly in English to facilitate comparison of language structures across the data. The final dataset for this paper comprises seven consultations by five clinicians: one general practitioner (private clinic) and four medical officers (public clinics and hospital) (see online supplementary appendix A).

**Analysis**

In accordance with CA methods, the recorded consultations were anonymised, and then transcribed using Jefferson’s transcription conventions\(^25\) (see online supplementary appendix B) by author AS, and reviewed by authors ZMD and AZ. Sequences of talk in which the PDA was mentioned or used were identified through repeated listening and viewing by AS, a doctoral student in applied linguistics, and reviewed by ZMD, a professor in applied linguistics. To facilitate analysis, CA research often focuses on one phase of the consultation, such as opening or examination.\(^16\) Since PDA talk occurs at different points and with varying frequency in the consultations,
we focused on initial PDA talk to enable analysis across consultations. Because opening sequences influence how consultations unfold,\textsuperscript{15,16,26} the initial sequences of PDA talk were considered an appropriate starting point at which to begin exploring PDA use in the data.

Given the limited research on interaction surrounding PDAs, we made preliminary investigations of several single episodes,\textsuperscript{27,28} describing the interactional aspects of the talk (eg, turn taking, structural organisation, turn design and lexical choice\textsuperscript{29}) in relation to patient-centred decision-making. As the analysis proceeded, the work was reviewed by the research team, the initial interactional analysis being made by the applied linguists (AS, ZMD and AZ) followed by input from the clinicians (NCJ, KEM, LPY and KLA) and healthcare sociologist (LYK).

This study received ethics approval from the Medical Research and Ethics Committee, Ministry of Health, Malaysia (Ref No: NMRR-10-1233-7299) and the Medical Ethics Committee, University of Malaya Medical Centre, Kuala Lumpur (MECRef No: 841.6). All participants gave informed consent.

RESULTS

Doctors began by asking whether patients had read and understood the PDA, which is unsurprising given their legal and ethical duty to ensure patients make informed decisions. The PDA was then used to exchange information or to initiate deliberation on treatment depending on whether the patients had read it or not.

Exchanging information

In two consultations (B8 and B15) in community clinics, the patient disclosed that she had not read the PDA. The doctor did not bring up the PDA immediately, but began by addressing test results (B8) or asking about the patient’s lifestyle (B15). Both patients initially affirmed they had read the PDA, and only revealed that they had not on further questioning. The doctors then began going through the PDA with the patients, using it to provide information or to elicit patient perspectives towards starting insulin. Here, we present an extract from consultation B8 to exemplify the interactional practices observed in this context.

The doctor (DR1) has given the patient (P1) her recent test results, showing a high sugar level. P1 has disclosed that she had stopped taking her oral medication, and is only taking Ayurvedic (traditional Indian) medicine. After explaining the complications of sustained high sugar, DR1 brings up the PDA 6 min into the consultation, with a polar question (requiring a yes/no response) on whether P1 has read it (table 1: extract 1, 283).

P1’s affirmation of this (“Yah”) is hurried, overlapping DR1’s turn. Acknowledging P1’s response (286), DR1 shifts the topic away from the PDA to ask two polar questions, to confirm P1’s preference for Ayurvedic medicine (286–287) and to explore the reasons behind her preference (291–292 “you feel that Ayurvedic can help you?”). P1 responds with affirmations but does not elaborate (288, 293). DR1’s next question (294–295) appears to seek P1’s view on the effectiveness of Ayurvedic medicine. However, by foregrounding P1’s high sugar against Ayurvedic medicine, DR1’s question presents a rhetorical contradiction which limits P1’s ability to respond affirmatively. P1 then challenges DR1 to defer her evaluation until the next appointment (296–297), which receives DR1’s overlapped acceptance (298). P1’s laughter (297, 299) indicates her orientation towards a delicate situation.\textsuperscript{30,31}

The ‘but’ that prefaces DR1’s response after her initial acceptance (table 2: extract 1a, 300) suggests she intends to continue the topic. She asks again whether P1 has read the PDA. After a hesitant affirmation, P1 discloses that she has not read the PDA. In response, DR1 echoes P1’s ‘not yet’ followed by ‘Okay’ uttered four times, indicating she now understands the situation (304). DR1 begins explaining the content of the PDA, going through the first section, “What are your concerns?” with P1. It is here that the doctor shifts from merely topicalising the PDA to going through it. Reading from a list of common patient concerns, DR1 rephrases the affirmative sentences in the PDA as questions (310, 314 and 316), attempting

<table>
<thead>
<tr>
<th>Table 1 Extract 1—consultation B8 (public clinic)</th>
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<tbody>
<tr>
<td>283</td>
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<td>284</td>
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<td>299</td>
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<td>300</td>
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</tbody>
</table>
to elicit P1’s concerns. For example, DR1 reformulates the sentence "I am afraid of injections and pain" as "Are you afraid of injections and pain?" (310). After P1 gives several negative responses, DR1 seeks confirmation that P1’s decision against insulin is due to her preference for Ayurvedic medicine, rather than unstated concerns. This sequence is repeated several times throughout the consultation (not shown), with DR1 going through the sections of the PDA and P1 reiterating her preference for Ayurvedic medicine.

Opening up deliberation on treatment

Having confirmed that a patient has read the PDA, the doctor can ascertain further the patient’s preparedness for decision-making. Initial considerations are largely information-focused: whether the patient understands the content or has any questions. Also relevant are patient concerns, values and opinions. We present extracts from four consultations involving patients who claim to have read the PDA. The extracts show four patient responses to doctors’ initiation of deliberation on treatment: 1) not raising issues/concerns; 2) raising issues about the PDA; 3) disclosing fears; and 4) disclosing a preference against insulin.

Patient does not raise issues or concerns

Two patients (consultations A4 and C14) do not raise issues or express concerns in response to the doctors’ PDA-related questions. After asking about the patients’ comprehension and opinion of the PDA, the doctors elicit a decision from the patients. Extract 2 (tables 3-4) is from consultation A4, a triadic consultation involving

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**Table 2** Extract 1a—continued

<table>
<thead>
<tr>
<th>Line</th>
<th>Dialogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>DR1: ={Fi:ne} But you have read about this book right?</td>
</tr>
<tr>
<td>301</td>
<td>P1: Y- ya:sh. N- not yet, not [yet just a::]</td>
</tr>
<tr>
<td>302</td>
<td>DR1: [not ye::t ]</td>
</tr>
<tr>
<td>303</td>
<td>P1: Okay-okay. So, okay. There are, okay, w-, this is s- trying to show what are the concerns :i:ah=</td>
</tr>
<tr>
<td>304</td>
<td>DR1: =Ya:sh</td>
</tr>
<tr>
<td>305</td>
<td>P1: Okay what is the concerns of, um, taking the insulin?=</td>
</tr>
<tr>
<td>306</td>
<td>F1: =MH;?</td>
</tr>
<tr>
<td>307</td>
<td>F1: No, [not] afraid. Yup=</td>
</tr>
<tr>
<td>308</td>
<td>DR1: [No:]</td>
</tr>
<tr>
<td>309</td>
<td>DR1: =Afraid of sugar getting too lo:w?</td>
</tr>
<tr>
<td>310</td>
<td>F1: =No::</td>
</tr>
<tr>
<td>311</td>
<td>DR1: No:: no. Afraid of getting, a:, gaining weight? (0.5) A- d’ you know about insulin?</td>
</tr>
<tr>
<td>312</td>
<td>F1: After I have explained=</td>
</tr>
<tr>
<td>313</td>
<td>F1: =Ya; I guess]</td>
</tr>
<tr>
<td>314</td>
<td>DR1: =Do you and :so ::on?=</td>
</tr>
<tr>
<td>315</td>
<td>F1: =Ya, I guess I [will gain ] weight. Mm=</td>
</tr>
<tr>
<td>316</td>
<td>DR1: [Yes, ye::s]</td>
</tr>
<tr>
<td>317</td>
<td>P1: =So, ok:ay. (0.7): How:how a- y- the rea:son:</td>
</tr>
<tr>
<td>318</td>
<td>DR1: a:::=</td>
</tr>
<tr>
<td>319</td>
<td>F1: =Ya:sh,</td>
</tr>
</tbody>
</table>

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**Table 3** Extract 2—consultation A4 (private clinic)

<table>
<thead>
<tr>
<th>Line</th>
<th>Dialogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>DR2: Mrs B and Mr B, ye:=</td>
</tr>
<tr>
<td>002</td>
<td>H = [Yes]</td>
</tr>
<tr>
<td>003</td>
<td>P2: [A::]</td>
</tr>
<tr>
<td>004</td>
<td>DR2: [You] have read the book right:=</td>
</tr>
<tr>
<td>005</td>
<td>H = [Yes]</td>
</tr>
<tr>
<td>006</td>
<td>P2: [Yas]=</td>
</tr>
<tr>
<td>007</td>
<td>DR2: =A::, so what you think of the book? (0.5)</td>
</tr>
<tr>
<td>008</td>
<td>P2: &lt;I think&gt;, &gt;I’m no::t sure&lt; mh h h={(laughs)}</td>
</tr>
<tr>
<td>009</td>
<td>DR2: =Hez [hez hez] (laughs)</td>
</tr>
<tr>
<td>010</td>
<td>H = [Er, the ] book=</td>
</tr>
<tr>
<td>011</td>
<td>P2: =Is ez=</td>
</tr>
<tr>
<td>012</td>
<td>H =Is in very simple langua::[jge]</td>
</tr>
<tr>
<td>013</td>
<td>P2: [ V::r]=</td>
</tr>
<tr>
<td>014</td>
<td>DR2: =Ye::[is]?</td>
</tr>
<tr>
<td>015</td>
<td>P2: =[sim:ple]</td>
</tr>
<tr>
<td>016</td>
<td>H = [And] very easy to understand.</td>
</tr>
</tbody>
</table>
the patient’s husband (H), who helps interpret between English and Tamil. The doctor (DR2) initiates the PDA talk early in the consultation, by asking whether the patient has read it.

DR2’s initial reference to the PDA is formulated as a question (004), and comes immediately after a brief identity-confirmation sequence, which functions as a greeting. Ending with a tag question, the enquiry (“You have read the book, right?”) favours an affirmative response, which both P2 and H provide (005, 006). DR2 then asks for P2’s views on the PDA using a Wh-question (open-ended question). After a silence, P2’s response displays uncertainty (“I think, I’m not sure”). Her laughter, which is reciprocated by DR2, indicates a delicate situation. H resumes discussing the PDA (011), delivering a favourable assessment of it (“…very simple language”). P2 then partially echoes her husband, briefly interrupted by DR2’s encouragement to complete her utterance (“Yes?” 015). Overlapped by H’s elaboration, P2 completes her brief assessment of the PDA.

Following further elaboration by P2 and H (omitted), DR2 resumes questioning (table 4: extract 2a—continued), with a Wh-question (037). Although designed to allow P2 to express her opinion, the question remains focused on the PDA (“the book”), rather than the decision on starting insulin. Producing a preferred response, P2 describes the PDA as “easy” (038). DR2 then asks whether P2 understands the PDA. P2’s pauses, hesitation and incompressible utterance indicate her difficulty comprehending the doctor’s question, leading to her delayed response (042–043). She speaks in Tamil to H, who then confirms that P2 has, in fact, understood (045–046). DR2 seeks this confirmation from P2 (“You understand, ya?” 048), receiving a weak affirmation (049). Taking the unmarked token as confirmation of understanding, the doctor commences talk on the treatment decision with a series of questions, soliciting P2’s agreement to start insulin (050), and her explanation for (055) and confirmation of (063–065) this decision. DR2’s question presents the decision as a proposal, with P2 providing the relevant and preferred acceptance through minimal responses (“Mh” 054, “Ya” 066). This shows DR2 orienting, however minimally, to P2’s right to accept or reject the recommended treatment. Yet, in exploring P2’s decision, DR2’s use of ‘have to’ depicts starting insulin as an obligation (“you know why you have to take the insulin?” 055–056), which is mirrored in P2’s response that she has “no choice” and “must take the insulin.”
Patient raises issues about the PDA

Consultation A3 is also conducted by D2, who begins as she does in consultation A4, by enquiring whether the patient has read "the book" (Table 5: extract 3). The rising intonation of DR2’s confirmation-seeking statement indicates a response is required, and the wording shows affirmation is expected (lines 001–002). P3 responds with a minimal affirmation, which the doctor echoes ("Yes" 004). She then asks a Wb-question to elicit P3’s opinion, repeating it (006) after P3’s overlapping turn (005). After a silence (007), P3 produces an assessment of the PDA (008–012), describing its contents as “just basic”. DR2 then asks about the information P3 requires.

P3 begins listing questions he would like the PDA to address, beginning with the effects of sustained high glucose level (017–018). DR2’s response, a minimal acknowledgement token (“Right” 020), leads P3 to continue, with a question about ‘overcontrol’ (021), which refers to hypoglycaemia, a side effect of insulin.

Patient discloses fear of injections

Consultation C12 is conducted in a public hospital by DR3, who had given the patient (P4) the PDA on her previous visit. The doctor brings the PDA up early, after a brief greeting (not shown in Table 6: extract 4). As video recording was possible, participants’ physical actions were also transcribed.

Unlike the other doctors, DR3 initiates PDA talk (001) by enquiring whether P4 has any problems with “the book”, or whether she understands it, beginning what appears to be an invitation to talk or ask questions (“or you want to”). P4 interrupts this (003), denying she has any difficulty understanding it (“yes, no, no”) and then affirms this with the statement “I understand”. DR3 acknowledges this with “Okay”, but continues asking P4 if she understands the PDA (006). P5 briefly affirms this, handing DR4 her PDA (008).
responds only with a nod (012, 014) to DR4’s further talk on the PDA. P5’s lack of uptake forces the doctor to focus on her preference, for which DR4 solicits confirmation (015). P5 nods again, adding a minimally verbalised confirmation that she does not want insulin (016).

**DISCUSSION**

Our analysis of the initial sequences of doctor–patient talk shows that the use of the PDA did not effectively support patient-centred decision-making. The main barriers to fulfilling the PDA’s informational purpose are that patients’ disclosures about having read it may not be reliable, and that it is unclear whether patients understood the PDA content since its use was limited in most consultations. Also, while PDA talk led towards deliberation on treatment, the doctors’ interaction was not patient-centred, even when patients mentioned their concerns or showed that they found these conversations difficult. Moreover, if the patients did not bring up issues,
treatment was not deliberated at length, and doctors presented the decision as acceptance or refusal of insulin, rather than a choice among several options.

While the initial sequences of PDA talk are not consultation ‘openings’ in the traditional sense, they mark the beginning of decision-making, in that patient responses to doctors’ PDA-related questions lead to different trajectories of PDA use: information exchange, or deliberation, culminating in a decision on whether or not to start insulin. Although the trajectories correspond with the analytical stages of SDM, the interaction in the initial sequences of talk show that patients’ knowledge, concerns and preference are not sufficiently explored, which has implications for the decision-making process that follows.

As figure 1 shows, the doctors’ initial questions are information-focused, mostly yes/no questions. Yet some patients respond by disclosing issues or even refusing insulin. If patients do not resist, doctors move the consultation towards closure, seeking patient acceptance of the recommended treatment. Treatment is only deliberated on if patients resist insulin and the PDA is used as a tool for information exchange only if patients say they have not read it. While this uses time efficiently, it does raise questions about whether patients are actually informed and their contributions are given due priority.

Our findings show further how doctors’ questioning practices constrain patient contributions.21–22 32 33  By asking mainly yes/no questions about whether patients have read or understood the PDA, the doctors rely on single-word responses to decide if further information exchange is needed. As extract 1 (tables 1-2) shows, a patient’s first response to “Have you read the PDA?” may be unreliable. Other comprehension-focused questions also tend to generate ‘no issue’ responses, for example, patients say ‘yes’ to enquiries such as “Do you understand?”/”You know why you have to take the insulin, right”; and ‘no’, to “Do you have any questions?”. Because the doctors move quickly from PDA-related questions to deliberation on insulin, superficial assessment of patient knowledge means they risk making a decision with uninformede patients. Heritage’s28 proposition that norms from ordinary conversation cause dysfunction in doctor–patient interaction may provide an explanation, since the doctors’ tendency not to thoroughly explore patient knowledge may be influenced by norms of news delivery. Given the deeply ingrained tendency to avoid telling others information they already know,32 doctors may habitually avoid probing if a patient claims to have understood the PDA, especially when several doctors manage one patient, as they may not know what was discussed in previous consultations.

Preference organisation, or the bias that phrasing conveys towards specific responses,32–35 may both explain and offer solutions for patients’ hesitation to disclose that they have not read the PDA. Yes/no questions generally prefer ‘yes-type’ responses, unless negative polarity, for example, ‘any’, is introduced; moreover, doctors’ questions tend to favour ‘no problem’ responses.32 33  For example, patients tend to disclose unmet concerns when doctors use ‘some/other’, rather than ‘any’, in closing questions (eg, “Do you have other problems you want to discuss?”).33 35  Additionally, the preference for an affiliative response36 may prevent patients from admitting that they have not read the PDA as recommended. Patient disclosures may be encouraged through repeated questioning (eg, extract 1), but doctors could also err on the side of caution by using questions that prefer negative responses, (eg, “Did you have any time to read the PDA?”) or that provide patients with a built-in reason for not reading the PDA, (eg, “I know you’ve been busy, but did you manage to read the PDA?”). Since reading the PDA does not necessarily mean understanding it, similar care must be taken in eliciting patients’ questions. Doctors should resist the habit of using ‘any,’ and instead formulate ‘yes’-preferring questions, for example, “Do you have some questions?” or “Is there something you don’t understand?”.

The doctors’ initial PDA-related questions act as presequences, allowing them to approach treatment deliberation without explicitly mentioning ‘insulin’ or ‘decision’. This may be useful, given the patients’ fears,37...
misperceptions and resistance linked to insulin. Yet patients may still regard questions about the PDA as pressure to discuss or accept the recommended treatment. In extracts 4 and 5, the patients respond by initiating new topics (needle fear and refusal of insulin) rather abruptly, although topic shift is usually collaborative and prolonged. This 'minimal response-topic shift', along with paralinguistic features such as laughter, repetition and interjections, may indicate that patients find the conversation difficult.

The interactions are largely physician-centred and doctors’ questions are mostly closed-ended questions, which limit patients’ opportunities to participate. The doctors also seem to prioritise their own agendas over patient cues and contributions, continuing to refer to the PDA after patients disclose fears (extract 4) or state their preference against insulin (extracts 1 and 5). This may be related to the Observer’s Paradox, that is, the doctors’ awareness of the research focus, or because they want to ensure patients are informed before engaging in further discussion. However, being more patient-centred would involve following the patient’s lead, for example, addressing fears immediately or acknowledging patients’ preferences, and then asking if they want to continue discussing treatment options. Awareness of interactional cues, for example, that minimal responses and silence (extract 5) can indicate resistance, and that laughter (extracts 1, 2 and 4) can accompany talk on ‘delicate’ matters or disaffiliation, can also help doctors be more responsive. Moreover, even though insulin is the medically recommended option, doctors can choose more neutral vocabulary to describe the PDA and to elicit patients’ views on treatment. Presenting treatment options, instead of limiting patients to acceptance or refusal of insulin can reduce the interactional and social burden imposed on patients by having to disagree with the doctor if they prefer not to start insulin.

The complex and chronic nature of type 2 diabetes, along with relatively low success in achieving glycaemic control, makes it necessary to improve treatment decision-making practices. Several PDAs have been developed and tested among patients with type 2 diabetes, including to empower patients in goal-setting and to support treatment decisions on statins and antihyperglycaemics. While enhanced decision-making and patient involvement are reported for the treatment PDAs, the goal-setting PDA had little effect on patient empowerment and was not fully used by many participants. Referring to the latter study, Hargraves and Montori recommend examining the doctor–patient consultation because PDAs ‘function or fail to function in this environment’. However, the randomised trials mentioned rely largely on patient self-report measures, with only one coding doctors’ interaction using the observing patient involvement in decision making (OPTION) scale. There is little information about what occurred in the consultations, and how this may relate to the reported outcomes.

Through the microanalysis of interaction in several single cases, we have exemplified the intricacies of implementing a PDA on insulin for treating type 2 diabetes in Malaysia, providing insights which may be useful in other contexts. This approach, however, especially in view of the sample size, does not make it possible to identify general patterns of PDA use. Nevertheless, our dataset has enabled us to describe some practices of doctors and patients in using a PDA in consultations in which the talk throws light on salient patient factors, including preference for complementary medicine, language barriers and varying perspectives on insulin. Future studies involving a larger collection of consultations, including by other HCPs and in other languages, and looking at PDA use through the entire consultation, could build on our findings for a broader perspective on PDA use in the Malaysian context.

Although our focus is on interaction, we are mindful that our findings may be limited by other possible influencing factors, including doctors’ paternalism and communication skills, PDA design and delivery, and systemic or individual barriers to SDM. First, the interactions may have been affected by differences between healthcare settings, particularly the time available for consultations and continuity of care, both of which are barriers/facilitators of SDM. Four of the patients (A3, A4 in the private clinic and C11, C12 in the public hospital) had seen the same doctor for their previous consultations, when they were given the PDA. This could explain the doctors’ cursory enquiries, as patient knowledge and concerns could have been discussed previously.

Moreover, as most consultations were in public settings, limited consultation time may have constrained the interaction of both doctors and patients. The varying time that patients had to read the PDA must also be noted, although the data showed that more time does not ensure that patients will read the PDA. Finally, the generally low level of education among the patients (see online supplementary appendix A) may be a factor in their lack of participation, as suggested by research on SDM barriers.

**CONCLUSION**

Our analysis shows how doctor-centred practices impede the effective implementation of the PDA in initial sequences of talk, in that the doctors’ PDA-focused enquiries can overshadow patient contributions while also failing to ascertain patients’ knowledge. While the PDA aimed to support patient-centred decision-making, patients’ knowledge, concerns and preference are not sufficiently explored by the doctors, which may be attributed to many factors including the influence of habits from ordinary conversation. Effective interaction should therefore be emphasised both in training clinicians to use PDAs and in designing the content and delivery of PDAs. Further studies...
on PDA use in different clinical contexts can inform these efforts by identifying patterns of interaction and effective practices in implementing PDAs, from when they are given to patients up to the conclusion of decision-making.

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Contributors NCJ and LKY conceptualised, designed, planned and coordinated the larger study from which the data were obtained. AS, 2MD and AZ conceptualised and designed the manuscript. AS, 2MD, AZ, NCJ, LKY, KEM, LPY and KAL contributed to the data analysis. The initial draft of the manuscript was prepared by AS and 2MD and then circulated among all authors for critical revision. All authors read and approved the final manuscript.

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Ayesha Syed, Zuraidah Mohd Don, Chirk Jenn Ng, Yew Kong Lee, Ee Ming Khoo, Ping Yein Lee, Khatijah Lim Abdullah and Azlin Zainal

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