Barriers and facilitators to type 2 diabetes management in the Caribbean region: a qualitative systematic review

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ABSTRACT

Objective: The objective of this systematic review was to summarize the barriers and facilitators to type 2 diabetes mellitus management in the Caribbean region.

Introduction: The prevalence of type 2 diabetes mellitus in the Caribbean is of significant concern. Poor management of type 2 diabetes mellitus increases the risks of complications and death. Several studies have been conducted to explore the barriers and facilitators to type 2 diabetes mellitus management in the Caribbean; however, a systematic review has yet to be conducted.

Inclusion criteria: Eligible participants were adults (aged 18 and above) with type 2 diabetes mellitus, their families/carers, and health care professionals whose work involves the management of type 2 diabetes mellitus in the Caribbean. The review included studies that focused on their views, experiences, attitudes, understandings, perceptions, and perspectives regarding the barriers and facilitators to type 2 diabetes mellitus management.

Methods: Electronic searches of MEDLINE, Embase, CINAHL/BNI (EBSCOhost), PsycINFO, AMED, Web of Science, and Scopus were conducted from database inception to March 2020. Additionally, gray literature was searched via EThOS, OpenGrey, and ProQuest Dissertations and Theses. JBI methodology for conducting qualitative systematic reviews was followed. Screening of studies, assessment of methodological quality, and data extraction were conducted independently by two reviewers. Findings from studies were synthesized using a meta-aggregation approach, and confidence in the findings was ranked using the ConQual approach.

Results: Eight studies were included in the review, all of which focused on patients’ perspectives. There were five synthesized findings, including i) cultural demands and pressures impact self-management and general care of type 2 diabetes mellitus (low confidence evidence); ii) support systems’ influence on the general management of type 2 diabetes mellitus (moderate confidence evidence); iii) personal and environmental background/circumstances can encourage and limit good self-management and general management of type 2 diabetes mellitus (high confidence evidence); iv) psychological factors that influence patients’ actions towards the management of type 2 diabetes mellitus (moderate confidence evidence); and v) psychological factors and their influence on patients’ adherence to type 2 diabetes mellitus management (low confidence evidence).

Conclusions: Patients in the Caribbean have multiple barriers and facilitators that limit and promote effective management of their type 2 diabetes mellitus. Identifying the barriers and facilitators to type 2 diabetes mellitus management in the Caribbean will assist with development of effective type 2 diabetes mellitus management programs. However, further qualitative studies on barriers and facilitators to type 2 diabetes mellitus management in the Caribbean that target health care professionals and families/carers should be conducted.

Systematic review registration number: PROSPERO CRD42018097242

Keyword barriers; Caribbean; facilitators; systematic review; type 2 diabetes management

## Summary of Findings

### Barriers and facilitators to type 2 diabetes management in adults in the Caribbean region


<table>
<thead>
<tr>
<th>Synthesized findings</th>
<th>Type of research</th>
<th>Dependability</th>
<th>Credibility</th>
<th>ConQual score</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cultural demands and pressures impact self-management and general care of T2DM:</strong></td>
<td>Qualitative</td>
<td>Downgrade one level</td>
<td>Downgrade one level</td>
<td>Low</td>
<td>Dependability: Downgraded one level as 3 out of 5 “yes” responses. Credibility: Downgraded one level as 6 out of 7 findings were unequivocal, 1 credible.</td>
</tr>
<tr>
<td>Cultural demands/pressures, non-evidence-based traditional medicines or therapies are barriers to T2DM management. Evidence highlighted how patients continued to consume unhealthy local foods despite the repercussions.</td>
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</tr>
<tr>
<td><strong>Support systems’ influence on the general management of T2DM:</strong></td>
<td>Qualitative</td>
<td>Remains unchanged</td>
<td>Downgrade one level</td>
<td>Moderate</td>
<td>Dependability: 4 out of 5 “yes” responses. Credibility: Downgraded one level as 11 out of 12 findings were unequivocal, 1 credible.</td>
</tr>
<tr>
<td>There were different types of support given to T2DM patients which did not help improve their management. Lack of support from family and friends and poor advice from family and friends are barriers to T2DM management. Positive support from family and friends and good support from health care personnel are facilitators to T2DM management. Religious, family and friends, and health care professionals support systems were provided to T2DM patients.</td>
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</tr>
<tr>
<td><strong>Personal and environmental background/circumstances can encourage and limit good self-management and general management of T2DM:</strong></td>
<td>Qualitative</td>
<td>Remains unchanged</td>
<td>Remains unchanged</td>
<td>High</td>
<td>Dependability: 4 out of 5 “yes” responses. Credibility: All 11 findings were unequivocal.</td>
</tr>
<tr>
<td>Barriers to physical activity, co-morbidities/medical history and lack of resources are barriers to T2DM management. Patients did not feel safe in the areas in which they had to exercise and, in addition, there was a shortage of supplies which are vital in T2DM management. Perceived benefits of physical activity are facilitators to T2DM management. They were personal backgrounds and circumstances which positively impacted patients’ ability to manage their T2DM.</td>
<td></td>
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</tr>
<tr>
<td><strong>Psychological factors that influence patients’ actions towards management of T2DM:</strong></td>
<td>Qualitative</td>
<td>Remains unchanged</td>
<td>Downgrade one level</td>
<td>Moderate</td>
<td>Dependability: 4 out of 5 “yes” responses. Credibility: Downgraded one level as 12 out of 13 findings were unequivocal, 1 credible.</td>
</tr>
<tr>
<td>Psychological factors refer to the factors that mention the thinking of a person that influences his/her action to seek contentment, resulting in negative results. Low mood and low motivation, fear of the disease/complications stress, social stigma, and perception of the disease/complications are barriers to T2DM management. It includes positive outcomes as a result of a person’s thinking that influences his/her action to seek contentment. High mood and high motivation and fear of the disease/complications as a motivator are facilitators to T2DM management.</td>
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<td></td>
</tr>
<tr>
<td><strong>Psychological factors and their influence on patients’ adherence to T2DM management:</strong></td>
<td>Qualitative</td>
<td>Downgrade one level</td>
<td>Downgrade one level</td>
<td>Low</td>
<td>Dependability: Downgraded one level as 3 out of 5 “yes” responses. Credibility: Downgraded one level as 13 out of 17 findings were unequivocal, 4 credible.</td>
</tr>
<tr>
<td>Negative personal attitude is a negative way of thinking or feeling based on experiences, values, and beliefs. Negative personal attitude towards adherence of good T2DM management is a barrier to T2DM management. Positive personal attitudes is a positive way of thinking or feeling based on experiences, values, and beliefs. Positive personal attitudes towards the adherence of good T2DM management is a facilitator to T2DM management. Religion and the person’s belief in God also had a positive impact on T2DM management.</td>
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</tr>
</tbody>
</table>

T2DM, type 2 diabetes mellitus.
Introduction

Type 2 diabetes mellitus (T2DM) is a chronic condition characterized by high blood glucose levels.\textsuperscript{1,2} As a result of the increasing prevalence of T2DM, it is rapidly becoming an epidemic in many countries.\textsuperscript{3} There are multiple risk factors associated with T2DM, and the more risk factors a person has, the more likely they are to develop T2DM.\textsuperscript{4,5} Some of the common risk factors are ethnicity (eg, South Asian, African-Caribbean/Black African, and Chinese ethnicities are at higher risk), older age, family history of T2DM, unhealthy diet, physical inactivity, overweight or obesity, dyslipidemia, hypertension, history of gestational diabetes in women, and prediabetes.\textsuperscript{4} Chronic hyperglycemia is associated with long-term complications (eg, macro- and microvascular) and death.\textsuperscript{6} Type 2 diabetes mellitus is also associated with reduced quality of life and life expectancy.\textsuperscript{7} It places a substantial burden on patients, their families, and their caregivers, as well as on a country’s economy and health care system.\textsuperscript{3} The general management strategy includes patient education, lifestyle advice, managing blood glucose levels, managing cardiovascular risk, and identifying and managing long-term complications.\textsuperscript{2} If T2DM is detected and managed early, people with T2DM can live longer, healthier lives.\textsuperscript{8}

Type 2 diabetes mellitus is one of the most contemporary and important public health challenges in the Caribbean region.\textsuperscript{9} In the region, 95% of people living with diabetes have T2DM,\textsuperscript{1,2,10} and the prevalence of T2DM is roughly 9\%\textsuperscript{11} Patients with T2DM in the region have poor glycemic control and more T2DM-related complications.\textsuperscript{12} Type 2 diabetes mellitus is responsible for about 14\% of all deaths in the Caribbean region.\textsuperscript{11} Most of the associated morbidity and mortality occurs in adults between the ages of 18 and 59 years.\textsuperscript{10} Type 2 diabetes mellitus negatively affects the economic growth and overall productivity of the region. The quality of care of patients with T2DM is unacceptable in the Caribbean region, including inadequate guidance on diet and physical activity, monitoring of blood glucose levels, and screening for T2DM-related complications.\textsuperscript{12,13}

Several studies have been conducted in the Caribbean region on barriers and facilitators to T2DM management.\textsuperscript{12,14-20} Some of the barriers identified were poor access to health care, difficulty in maintaining behavior change, negative attitudes about living with T2DM, and lack of support from family members. We searched MEDLINE and Embase, and no systematic review has been conducted on this topic. The current systematic review aimed to synthesize existing barriers and facilitators, which can occur at the patient level, family/carers level, and health care professional level. Considering the region’s unique socio-cultural structure and lifestyle, as well as high burden and poor management of T2DM,\textsuperscript{21-24} this systematic review was needed to identify whether the perspectives in the region are the same or different from a global perspective. The findings of this review may help health experts to take appropriate actions to address the barriers and promote the facilitators to managing T2DM in patients in the Caribbean region.

Review question

What are the views, experiences, attitudes, understandings, perceptions, and perspectives of patients with T2DM, their families/carers, and health care professionals regarding the barriers and facilitators to T2DM management?

Inclusion criteria

Participants

This review considered studies that were conducted among adult patients (aged 18 years and older) with T2DM, their families/carers (those who look after a patient with T2DM), and health care professionals whose work involves the management of T2DM (eg, providers, commissioners).

Phenomena of interest

This review considered studies that focused on the views, experiences, attitudes, understandings, perceptions, and perspectives regarding the barriers and facilitators to T2DM management.

Context

The following countries were considered to represent the Caribbean: Anguilla, Antigua and Barbuda, Aruba, The Bahamas, Barbados, Bonaire, British Virgin Islands, Cayman Islands, Cuba, Curacao, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, Puerto Rico, Saint Kitts and Nevis, Saint Barthélemy, Saint Lucia, Saint Vincent and the Grenadines, Sint Maarten/Saint Martin, Trinidad and Tobago, Turks and Caicos Islands,
and U.S. Virgin Islands. Any study setting in the Caribbean was considered, such as community, primary care, secondary care, and tertiary care.

**Type of studies**
The review considered studies that focused on qualitative data, including, but not limited to, designs such as phenomenology, ethnography, grounded theory, and action research. We also considered cross-sectional surveys where free text relating to the review question was reported within the paper.

**Methods**
The systematic review procedure adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and the JBI methodology for systematic reviews of qualitative evidence. It followed an *a priori* protocol and is registered in PROSPERO: CRD42018097242.

**Search strategy**
An initial limited search was carried out in MEDLINE and Embase databases using the initial keywords type 2 diabetes, management, barriers, facilitators, and Caribbean. The titles and abstracts of the studies were screened for the same keywords used for the initial limited search, and the index terms used to describe the article were also identified. The search results were inspected to ensure that the relevant articles were identified.

We searched a wide range of sources to find both published and unpublished studies. For published studies, the following databases were searched from their inception dates to March 11, 2020: MEDLINE (Ovid), Embase (Ovid), CINAHL/BNI (EBSCOhost), PsycINFO (Ovid), AMED (Ovid), Web of Science, and Scopus (Elsevier). The full search strategies for all databases are detailed in Appendix I. These search strategies were developed through consultation with an information specialist/librarian at the University of Nottingham. The search for gray literature (unpublished studies) included ETHOS (British Library), OpenGrey, and ProQuest Dissertations and Theses (ProQuest), which were searched from their inception dates to March 11, 2020. The reference lists of all primary studies included in the review were screened for additional studies. We restricted to the following six official languages of the Caribbean: English, Spanish, French, Dutch, Haitian Creole, and Papiamento.

**Study selection**
Following the search, reviewer 1 (AN) collated all citations that were identified and uploaded into EndNote X8.2 (Clarivate Analytics, PA, USA), removing all duplicates. Titles and abstracts were independently screened by two reviewers (AN and WE) for eligibility using the inclusion criteria. Reviewer 1 (AN) then identified studies that were potentially eligible, and reviewed the full texts of those without an abstract. Full texts of the studies were assessed against the inclusion criteria by two reviewers (AN and WE) independently. Full-text studies that did not meet the inclusion criteria were excluded. The reasons for exclusion are reported in Appendix II. A third reviewer (KC/JLB) was required when disagreements between the two reviewers (AN and WE) did not reach a consensus through discussion.

**Assessment of methodological quality**
All the included studies were critically assessed using the qualitative standardized critical appraisal tool from the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia). The JBI Critical Appraisal Checklist for Qualitative Research consists of 10 questions, and each criterion was scored as either being met (Yes), not met (No), unclear (U), or not applicable (N/A). Data extraction and synthesis were conducted for all studies that met the inclusion criteria regardless of their methodological quality, because both high-quality as well as low-quality studies can generate potentially valuable insights by providing a richer understanding of the research phenomenon. Two independent reviewers (AN and HW) were involved in the process. Disagreements were resolved through discussion. A third reviewer (KC/JLB) was not required to resolve disagreements.

**Data extraction**
Data extraction was undertaken independently by two reviewers (AN and HW). Any disagreements between the two reviewers were resolved through discussion. When a consensus was not reached, a third reviewer (KC/JLB) was required. A data extraction and critical appraisal database was developed using Microsoft Excel (Redmond, Washington, USA), based on JBI SUMARI and used for the full-text studies retrieved. The reviewers extracted study characteristics: authors, year of publication,
The specific study findings (barriers and facilitators to T2DM management in the Caribbean region) were extracted for the different population groups (patients, family/carers, and health care professionals). The reviewers (AN and HW) extracted themes, which were recorded as findings, and direct quotes from participants, which were recorded as illustrations. These were discovered through repeated reading of the results of the included studies. Reviewers (AN and HW) searched for any bold text and italic text, tables, and diagrams; data in the form of themes, metaphors, or rich descriptions; and key words such as themes, subthemes, phrases, categories, quotes, barriers, and facilitators to T2DM management. The data extraction is detailed in Appendix III. The credibility of each finding was also assessed independently by two reviewers. When disagreements surfaced between the two reviewers (AN and HW), they were resolved through discussion. When a consensus was not reached, a third reviewer (KC/JLB) was involved. Th e levels of credibility are shown in Table 1.

**Table 1: Levels of credibility**

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unequivocal (U)</td>
<td>The finding is accompanied by an illustration that is beyond a reasonable doubt and is not open to challenge.</td>
</tr>
<tr>
<td>Credible (C)</td>
<td>The finding is accompanied by an illustration that is lacking a clear association and is open to challenge.</td>
</tr>
<tr>
<td>Not supported (NS)</td>
<td>When neither unequivocal nor credible can be applied and when the most notable findings are not supported by the data.</td>
</tr>
</tbody>
</table>

**Data synthesis**

Quotes detailing the views, experiences, attitudes, understandings, perceptions, and perspectives of the barriers and facilitators to T2DM management were also extracted to support the findings. The illustrations and findings were the exact words of the participants and authors, respectively, which were located in the results of the included studies. All the extracted findings from three different populations (patients, family/carers, health care professionals) were synthesized to develop a core set of synthesized statements.

The qualitative study findings from all the studies were pooled using the meta-aggregation approach.\(^{27,30}\) This involved the compiling of findings and categorizing them on the basis of similarity in meaning. These categories were then subjected to a synthesis in order to produce a single comprehensive set of synthesized findings. Three reviewers were involved in data synthesis. The synthesis of findings was done initially by one reviewer (AN) and then discussed with two additional reviewers (KC and JLB). One reviewer (AN) compiled all the similar findings into categories. Each finding was written on a separate label, and the ones that were related were grouped and given a name or description that represented them all. This was an iterative approach until agreement was reached between all three reviewers (AN, KC, and JLB). All three reviewers (AN, KC, and JLB) then reviewed the categories to ensure that the findings were placed appropriately. Reviewer 1 then grouped all similar categories to make synthesized findings. All the reviewers (AN, KC, and JLB) met again to review the synthesized findings and to create appropriate statements to represent each one. Any disagreements were resolved through discussion with all three reviewers (AN, KC, and JLB).

**Assessing confidence in the findings**

The final synthesized findings were graded according to the ConQual approach for establishing confidence in the output of research synthesis and presented in a Summary of Findings (SoF).\(^{31}\) The SoF includes the major elements of the review and the justification of the ConQual score reported. The SoF also includes the title, population, phenomena of interest, and context for this systematic review. Each synthesized finding from the review was presented...
along with the type of research informing it, a score for dependability, a score for credibility, and the overall ConQual score.

Results
Study inclusion
Following the literature searches, 1058 records were identified through database searching and other sources. After duplicates were removed, 777 records were screened for eligibility. Following title and abstract screening, a further 671 records were excluded, leaving a total of 106 eligible for full-text screening. Ninety-eight studies were excluded at the full-text stage due to ineligible participants (5 studies), ineligible phenomena of interest (26 studies), ineligible study context (39 studies), ineligible study design (18 studies), or the full-text paper could not be sourced from the British Library (10 studies, 6 of which were abstracts/poster presentations). Reasons for exclusion can be found in Appendix II. Eight studies were identified as eligible for inclusion in the review (Figure 1).
Methodological quality
The qualitative studies scored highly across the methodological quality domains (Table 2). The overall quality of studies ranged from 70% (7 of 10 questions answered “Yes”) to 100% (10 of 10 questions answered “Yes”), and the majority of the quality domains (7 of 10) were met by all studies. Three of the quality domains had lower scores: Q6: Is there a statement locating the researcher culturally or theoretically? (5 of 8 studies, 63%); Q7: Is the influence of the researcher on the research, and vice-versa, addressed? (2 of 8 studies, 25%); and Q8: Are the participants, and their voices, adequately represented? (7 of 8 studies, 88%). This study contained unsupported findings.

Characteristics of included studies
The eight included studies were published between 2005 and 2019. Two studies were conducted in Jamaica,20,34 three in the Dominican Republic,35-37 and the other three were conducted in Puerto Rico,32 Saint Vincent,33 and the U.S. Virgin Islands.19 All of the included studies recruited participants with T2DM. The studies recruited participants from diabetes clinics, health care centers, community centers, an education program, private physician’s patient log, or self-referral. Seven of the included studies explicitly stated that the participants had T2DM.19,32-37 The eighth study recruited participants with either type 1 or type 2 diabetes mellitus; this study was included in the review because 99% of the respondents had T2DM.20 No studies were identified that recruited families/carers or health care professionals.

Six of the included studies used a qualitative design,20,33-37 one used a mixed-methods design,19 and one reported free text within a cross-sectional survey.32 When exploring the methodological approaches, four studies focused on phenomenology20,33,34,37 with the other studies mentioning different approaches such as connecting and categorizing,35 constant comparative,19 formative,36 and descriptive correlation.32 The sample size ranged from 14 to 133 participants, with a total sample size of 426 participants. Three sampling methods were used in the studies: purposive sampling,19,34-37 convenience sampling,32,33 and random sampling.20 Data collection included a variety of procedures: focus groups,33,34 semi-structured interviews,19,20,35,37 in-depth interviews,46 and questionnaires with open-ended questions (free text).19,32 The data analysis methods used in the studies varied, with four focusing on phenomenology20,33,34,37 and the others mentioning different approaches such as connecting and categorizing,35 constant comparative,19 formative,36 and descriptive correlation.32

Table 2: Critical appraisal of included studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
<th>Q9</th>
<th>Q10</th>
<th>Total % per paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davila32</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>90%</td>
</tr>
<tr>
<td>Gonzalez Rodriguez et al.36</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>U</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>90%</td>
</tr>
<tr>
<td>Morrissey-Ross et al.34</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>100%</td>
</tr>
<tr>
<td>Moss et al.33</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>U</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>80%</td>
</tr>
<tr>
<td>Nunez et al.19</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>U</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>Sadeghzadeh et al.37</td>
<td>Y</td>
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<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>U</td>
<td>Y</td>
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<td>90%</td>
</tr>
<tr>
<td>Wallace et al.35</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>90%</td>
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<tr>
<td>Wint et al.20</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>70%</td>
</tr>
<tr>
<td>Total % per question</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>63%</td>
<td>25%</td>
<td>88%</td>
<td>100%</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Y: yes; U: unclear; N: no; N/A: not applicable.

JBI critical appraisal checklist for qualitative research
Q1 = Is there congruity between the stated philosophical perspective and the research methodology?
Q2 = Is there congruity between the research methodology and the research question or objectives?
Q3 = Is there congruity between the research methodology and the methods used to collect data?
Q4 = Is there congruity between the research methodology and the representation and analysis of data?
Q5 = Is there congruity between the research methodology and the interpretation of results?
Q6 = Is there a statement locating the researcher culturally or theoretically?
Q7 = Is the influence of the researcher on the research, and vice-versa, addressed?
Q8 = Are the participants, and their voices, adequately represented?
Q9 = Is the research ethical according to current criteria or, for recent studies, is there evidence of ethical approval by an appropriate body?
Q10 = Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?
studies were thematic analysis,\textsuperscript{33,35} content analysis,\textsuperscript{32} inductive analysis,\textsuperscript{36,37} constant comparative method of qualitative analysis,\textsuperscript{19} and a combination of thematic and narrative analysis.\textsuperscript{35} Two studies did not state which specific analysis method they used; however, they reported using coding and identifying themes.\textsuperscript{20,34}

The included studies focused on different areas of T2DM management (Table 3). One study focused on physical activity, exploring self-efficacy beliefs and outcome expectancies (perceived benefits and barriers) as possible social cognitive factors affecting physical activity levels in patients with T2DM.\textsuperscript{32} The second study focused on self-management, diet, and medication, as well as how diabetes-related stress impacted T2DM self-management.\textsuperscript{36} The third study covered both self-management and lifestyle, focusing on the day-to-day experiences of persons with diabetes and lifestyles that may have caused an onset and progression of T2DM, health beliefs, attitudes, and knowledge of the population.\textsuperscript{34} The fourth study addressed medication (treatment), focusing on the reasons for the use of non-prescribable medicines in patients with T2DM.\textsuperscript{33} The fifth study addressed only self-management, focusing on self-management behaviors among patients with T2DM and investigating the impact of culture on self-management attitudes, knowledge, and behavior.\textsuperscript{19} This study also explored whether there was an association between self-management behaviors and patient-level characteristics and the clinical outcome of glycosylated hemoglobin levels.\textsuperscript{19} The sixth study explored local approaches to cope with stress associated with T2DM, as well as how the approach impacted patients’ lifestyles (physical activity and diet), medication, and clinic appointments.\textsuperscript{37} The seventh study focused on self-management and the role of social support through exploring the types and sources of social support across diabetes diagnosis and the self-management experiences of patients with T2DM.\textsuperscript{35} The eighth sixth study focused on two management areas, lifestyle change and glycemic control, through exploring patients’ knowledge of T2DM and motivational factors, and identified possible barriers to positive lifestyle changes and glycemic control.\textsuperscript{20}

This was the only study that included “not supported” findings (17), which were not used in meta-aggregation and did not inform the synthesized findings.\textsuperscript{20}

Review findings
The synthesized findings collated all barriers and facilitators of T2DM management in the Caribbean from patients’ perspective. After the aggregation of 60 findings, 17 categories were generated. Following further grouping of similar themes, the 17 categories were grouped into five synthesized findings. The synthesized findings are as follows: i) cultural demands and pressures impact self-management and general care of T2DM (six unequivocal findings, one credible finding); ii) support systems’ influence on the general management of T2DM (11 unequivocal findings, one credible finding); iii) personal and environmental background/circumstances can encourage and limit good self-management and general management of T2DM (11 unequivocal findings); iv) psychological factors that influence patients’ actions towards the management of T2DM (12 unequivocal findings, one credible finding; and v) psychological factors and their influence on patients’ adherence to T2DM management (13 unequivocal findings, four credible findings).

Synthesized finding 1
Synthesized finding 1 (Cultural demands and pressures impact self-management and general care of T2DM) comprised seven findings, which were merged into two categories (Figure 2). The finding expressed how patients continued to consume local unhealthy foods and non-evidence–based traditional medicines or therapies despite the repercussions.

Category 1.1: Following an unhealthy cultural-specific diet
Different types of food have different effects on the body of patients with T2DM. Participants expressed the importance of balancing consumption of different foods, including unhealthy foods, to help assist in the management of their T2DM.

“... If I feel drowsy, sick and I take some food and throw it in me mouth, it carry the feelings down. But if you sugar some tea and drink it, throw you down clean, you see.” \textsuperscript{33}(p.1495)

Some participants developed their own remedy to tackle different symptoms or conditions associated with T2DM, and in some cases, these were not the healthiest options. They also believed that some of these foods or remedies had been used in
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<td>Davila</td>
<td>Physical activity in Puerto Rican adults with type 2 diabetes mellitus</td>
<td>Not specified but was done for a PhD during 2008–09</td>
<td>Puerto Rico: an endocrinology clinic, private medical center, community center, education program.</td>
<td>Puerto Rican (born in PR or one parent born in PR), living in PR for the past five years, between 40 and 60 years of age, self-reporting as having T2DM for six months or more, able to read and write Spanish and answer questionnaires individually or through personal interviews. Subjects with orthopedic or neuromuscular conditions that impede engaging in normal daily physical activity were excluded.</td>
<td>Quantitative: descriptive correlation study</td>
<td>To explore self-efficacy beliefs and outcome expectancies (perceived benefits and barriers) as possible social cognitive factors affecting physical activity levels in Puerto Rican adults diagnosed with T2DM.</td>
<td>110 patients (men=38, women=72)</td>
<td>Convenience sampling</td>
<td>Questionnaire (with two open questions)</td>
<td>Qualitative: content analysis</td>
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<td>Gonzalez Rodriguez et al.</td>
<td>Contextualizing experiences of diabetes-related stress in rural DR</td>
<td>June to July 2015</td>
<td>Two nongovernmental organization rural health clinics in the Cibao Valley of the DR</td>
<td>Individuals 18 years and older with a confirmed T2DM diagnosis enrolled in the diabetes program were eligible.</td>
<td>Qualitative: informative qualitative study</td>
<td>To explore the experience of diagnosis and life with diabetes among adult men and women in rural communities in the DR.</td>
<td>28 participants (men=12, women=16)</td>
<td>Purposive sampling</td>
<td>In-depth interviews. We conducted and audio-recorded interviews in Spanish. Interview times ranged from 30 to 120 minutes. Our broad interview guide included questions on perceptions of the current health situation and transitions in health problems in participants' communities, experiences living with T2DM, and use of health services to manage T2DM. We wrote field notes for each interview to capture our immediate impressions and interesting themes.</td>
<td>Inductive analysis</td>
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<td>Morrissey-Ross et al.</td>
<td>Living with diabetes: experiences from Jamaican diabetes clinics in Kingston and Morant Bay</td>
<td>8 days in March 2016</td>
<td>Jamaica/clinic</td>
<td>Lived in urban or rural areas, prescribed insulin to control blood sugars (as issues related to using needles might affect adherence to the medical regimen), prescribed oral medication to control blood sugars, suffered from long-term consequences of the T2DM such as blindness, neuropathy, amputation, and cardiovascular disease, a variety of age groups, different family roles, from as wide a variety of religions as possible, adults (18 years and older) with diabetes attending Diabetes Association of Jamaica, person with diabetes who suffered from the disease for more than one year.</td>
<td>Qualitative: qualitative phenomenological study design</td>
<td>To describe the day-to-day experiences of persons with diabetes living in Jamaica; lifestyles that may have contributed to or detracted from the onset and progression of the disease; health beliefs, attitudes, and knowledge unique to this population; and differences between the sexes with regard to these issues.</td>
<td>41 patients (men=12, women=29)</td>
<td>Purposive sampling</td>
<td>Semi-structured interview (participants' data) Focus group to establish content validity of interview questions.</td>
<td>Not specified “I used NVivo 11 as the data analysis tool to assist in the identification of themes and important revelations from the interviews.”</td>
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<td>Moss et al.</td>
<td>Rural Vincentians’ (Caribbean) beliefs about the usage of non-prescribable medicines for treating T2DM</td>
<td>Not specified</td>
<td>Saint Vincent/health center</td>
<td>Not specified but stated that the population consisted of persons diagnosed with T2DM attending one rural health center in Saint Vincent, in the Grenadines.</td>
<td>Qualitative: qualitative design using phenomenology</td>
<td>To explore reasons for usages of non-prescribable medicines among a rural community of people with T2DM in Saint Vincent, the Grenadines.</td>
<td>14 patients: 1) Focus group (women=6); 2) Pre-testing data collection tool (n=8). Convenience sampling</td>
<td>Focus group discussion</td>
<td>Focus group discussion</td>
<td>Thematic analysis</td>
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<td>Nunez et al. 25</td>
<td>Self-management among patients living with diabetes in the United States Virgin Islands</td>
<td>January–April 2008</td>
<td>U.S. Virgin Islands/not specified. Patient panels of private physicians, government clinic appointment schedules (interviewed at homes).</td>
<td>1) At least 21 years of age; 2) Diagnosed with adult-onset diabetes after January 2005; 3) Resided in the U.S. Virgin Islands for at least 10 years and self-identified as a U.S. Virgin Islander; 4) Able to identify a medical home; 5) Absence of known systemic diabetic complications; 6) Not pregnant and no history of gestational diabetes.</td>
<td>Mixed methods (qualitative and quantitative) Constant comparative method of qualitative analysis</td>
<td>1) Identify patterns of self-management behaviors among patients with adult-onset diabetes in the U.S. Virgin Islands; 2) Examine the association between self-management behaviors, patient-level characteristics (ie, level of education, diabetes knowledge, income, and social support), and the clinical outcome of glycylated hemoglobin (A1c); 3) Characterize the impact of culture on self-management attitudes, knowledge, and behavior.</td>
<td>53 patients (men=8, women=45) Purposive sampling: patient panels of private physicians, government clinic appointment schedules, self-referral, and snowballing (one participant refers another community member meeting inclusion criteria).</td>
<td>Questionnaire/semi-structured interview (in-home interviews)</td>
<td>Qualitative: constant comparative method of qualitative analysis</td>
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<td>Sadeghzadeh et al. 27</td>
<td>Coping with diabetes stress among adults in rural Dominican Republic “I don’t think about it” (p.1)</td>
<td>June 2017</td>
<td>The Institute for Latin American Concern/Chronic Care International operate in the Cibao Valley of the DR.</td>
<td>Adults with T2DM from one rural clinic when patients came for their routine care visits.</td>
<td>Qualitative: formative explore phenomenon</td>
<td>Explored a local phenomenon, “no le doy mente” (I don’t think about it), used by adults with T2DM in the Dominican Republic to cope with diabetes stress.</td>
<td>19 people with diabetes (men=10, women=9) Purposive sampling</td>
<td>Semi-structured interview</td>
<td>An inductive analytic approach including iterative coding, memos, and matrices.</td>
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<td>Wallace et al. 25</td>
<td>Types and sources of social support among adults living with T2DM in rural communities in the Dominican Republic</td>
<td>June-July 2015</td>
<td>Dominican Republic/clinic</td>
<td>Not specified but participants were at least 18 years of age, spoke Spanish, reported a confirmed diabetes diagnosis, and were enrolled in the Chronic Care International program.</td>
<td>Qualitative: connecting and categorizing approach</td>
<td>Explored the types and sources of social support across diabetes diagnosis and self-management experiences among rural Dominicans living with T2DM.</td>
<td>28 patients (men=12, women=16) Purposive sampling</td>
<td>Semi-structured interview</td>
<td>A combination of narrative and thematic analytic techniques.</td>
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<td>Wint et al.</td>
<td>Knowledge, motivation and barriers to diabetes control in adults in Jamaica</td>
<td>Not specified</td>
<td>Jamaica/clinic</td>
<td>Not specified but stated that they were patients with DM.</td>
<td>Qualitative: descriptive study, phenomenological approach</td>
<td>Explore the Jamaican adult's knowledge of DM, motivational factors, and identify possible barriers to positive lifestyle changes and glycemic control.</td>
<td>133 patients (men=35, women=98). Randomized sampling: a computerized random sample of 35 men and 98 women with DM was selected from a specialist clinic population of 510 patients (144 men, 366 women).</td>
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DM, diabetes mellitus; DR, Dominican Republic; PR, Puerto Rico; T2DM, type 2 diabetes mellitus.
communities for generations, making them appropriate to use. In some instances, participants expressed that they continued to eat the unhealthy foods because they have been eating them all their lives and it has not caused any problems, nor are they dead yet as a result of eating these foods. As such, participants believed that foods cannot be unhealthy if they do not affect them or their illness (T2DM).

“I take liberty every day. Right now I have . . . 3 plantains, 5 or 6 tanya, sweet potatoes, and I plan to take pig tail and cornmeal dumplings and make a big pot of peas soup. . . . You

Figure 2: Synthesized finding 1: cultural demands and pressures impact self-management and general care of T2DM
know the attitude I take. I live 70 years eating the same thing. What, now it's going to kill me?" 19(p.7)

**Category 1.2: Use of non-evidence-based traditional medicines or therapies**

Patients reported the use of medicines and therapies that had no scientific evidence to support their use for T2DM management. Different types of ingredients were used to make a medicine, which was believed to tackle certain complications associated with T2DM.

"... If you buy an egg and you bust it a little and you throw it out in the pan, you know and you beat it with some of the milk and drink it ... that is a medicine." 33(p.1494)

Because these medicines and therapies are not evidence-based, their efficacy for T2DM management cannot be inferred. Patients believed that traditional medicines and therapies were better than conventional medicines. These traditional medicines were also passed along throughout the communities and from one patient to the next. Although patients did not have any scientific evidence on the benefits of the traditional medicines and therapies, they still consumed them hoping for the best results.

"(My neighbor) is a diabetic too. ... Sometimes she buys bush and give me some. I don’t know the name of it but it is supposed to help with sugar. So I use that." 19(p.7)

**Synthesized finding 2**

The second synthesized finding (Social systems’ influence on the general management of T2DM) comprises 12 findings, which were merged into three categories (Figure 3). Support systems may include family, friends, spouses, and health care professionals. They may also offer different types of support such as emotional, informational, and instrumental (eg, physical assistance, including financial, childcare, or transportation). This finding showed that family, friends, and health care professionals were support systems. Family and friends had both a positive and negative influence on T2DM management; however, health care professionals were perceived to have only a positive influence on the management of T2DM.

**Category 2.1: Poor support and advice from family and friends**

Patients reported that although family members were trying to be supportive by providing help, family members advised the patients against the doctor’s orders or gave their own advice or recommendations. Family and friends were identified as influencing the doses of medications. As a result of self-adjustment of medications, T2DM was not managed efficiently and effectively.

"Well, the doctor told me to take the insulin two times but my mother tell me I want to know if this is right. He tell me to take twenty five units in the morning and twenty five in the night. But she said it’s too much, and just gives me fifteen at night. So that’s what I do." 19(p.7)

Some patients expressed that their family and friends expected them to continue doing everything by themselves as usual with no help, even after being diagnosed with T2DM. Patients received limited, inconsistent support from family and friends. Also, patients reported that even if they received some level of support from friends, it was only for a short period and not for the long-term management of T2DM.

"No one supports me, no one. How do I say this, even if I feel bad no one pays attention. Not even my sisters come to visit and lend me a hand. But God gives me strength, because no one else helps me. What happens is that when my sugar levels go up, I cannot sleep well and sometimes I get scared. Sometimes my family does things I don’t like, which makes me feel ill, like I have high blood pressure. I don’t know. Listen, those who have diabetes have to be careful and so they need someone who will support them so that they feel better." 33(p.7,8)

**Category 2.2: Positive support from family and friends**

Although support from family and friends was a barrier to T2DM management, it was also a facilitator. Participants expressed how friends were more
than willing to offer their help and expertise. Friends would ensure that the patient would adhere to the healthy diet and stick to their self-management regimen. In addition, friends would invite their friends with T2DM to programs that they thought were beneficial to those with T2DM. At these programs, patients learned more about their T2DM and its management.

Support systems’ influence on the general management of T2DM

Poor support and advice from family and friends

Women had the primary responsibilities of the home such as domestic work and preparing family meals, even when those meals were not part of their recommended diet. Maintaining the same level of responsibilities they had before having diabetes coupled with reporting little support in the home led to narratives depicting stress and frustration. Rosa, a 52-year-old female living with diabetes for three years, described having limited support at home and how it affected her physically. (U)

Medical homes were rarely viewed as a primary source of diabetes education or support: self-adjustment of medication dosing and regimen influenced by friends and family (U)

Having a friend who ensured that he adhered to his diet was appreciated and helped him adhere to his self-management regimen. (U)

Cohabiting partners were often the primary supporters mentioned by participants when asked “who supports you with your diabetes?” (U)

Informational and instrumental support from friends and neighbors to get to the clinic. (U)

The path of direct support for diagnosis from friends and neighbors (U)

The role of support from cooperadores, who are tasked with not only supporting diabetes care and medication, but also delivering health talks on the importance of diabetes self-management strategies to all participants and the community at large. These health talks were often referenced in the interviews as a form of informational support to learn how best to manage their condition. Cooperadores also provided emotional support by showing that they cared about their participants through actively listening to their successes and challenges. (U)

Cooperadores played a key role in disseminating diabetes-related information and increasing awareness of the diabetes program in their communities. (U)

Coping with stress: diabetes program, diabetes education, and self-management techniques provided by cooperadores and providers at the clinic alleviated participants’ stress by reducing their uncertainty about diabetes (U)

Support systems' influence on the general management of T2DM

Positive support from family and friends

Physicians served as sounding boards for issues related to their diabetes and their day-to-day stressors. (U)

The role of support from cooperadores, who are tasked with not only supporting diabetes care and medication, but also delivering health talks on the importance of diabetes self-management strategies to all participants and the community at large. These health talks were often referenced in the interviews as a form of informational support to learn how best to manage their condition. Cooperadores also provided emotional support by showing that they cared about their participants through actively listening to their successes and challenges. (U)

Cooperadores played a key role in disseminating diabetes-related information and increasing awareness of the diabetes program in their communities. (U)

Coping with stress: diabetes program, diabetes education, and self-management techniques provided by cooperadores and providers at the clinic alleviated participants’ stress by reducing their uncertainty about diabetes (U)

Good support from health care personnel

Psychosocial support (U)

(T2DM, type 2 diabetes mellitus; U, unequivocal; C, credible)
"How did I first get here? The man sitting in the waiting room brought me. He found out about this program and invited a group of us to go with him. Every month a few of us go in his bus for our appointments."\textsuperscript{35}(p.6)

In addition, neighbors provided instrumental support by taking patients to the doctor and also providing informational support by alerting the patient that they might be ill because of their physical appearance. The doctor provided informational support by making a diagnosis.

"... She told me, 'you're sick, your clothes are loose and falling off of you.' I agreed. I had a t-shirt that I no longer fit in. Dry, I was getting drier, [... to the point that] a man told others 'be fearful of that man, he could have AIDS.' And I heard that, you see? I went to my partner and told her that I felt ill. After that a neighbour took me to the see a good doctor to see about my condition where the doctor then tells me, 'sir, you are a diabetic.'"\textsuperscript{35}(p.6)

\textbf{Category 2.3: Good support from health care personnel}

Participants expressed that male patients tended to avoid doctors, making them more vulnerable to T2DM complications. However, health care professionals provided informational support, which included medical advice to assist patients who were in distress or experiencing complications, and also provided health talks on self-management. The support from health care personnel is pivotal in T2DM management; it relieved patients' stress by reducing any reservations about the disease.

"For men, we can suffer from a problem with (sexual) relations. I spoke with the doctor when I had a problem [erectile dysfunction]. He told me what I need to do to control my sugar otherwise I won’t get better."\textsuperscript{35}(p.8)

Health care professionals also provided emotional support to patients by speaking to them about their problems, which helped them to feel better. This allowed patients to get a better perspective of their T2DM so that they could cope with it.

"Before I came here I felt that everything was crashing around me. Some of us feel like we're drowning in a cup of water because we do not find someone to talk to about our problems. But now I can talk to the cooperadores ... to the doctor, and I feel better."\textsuperscript{35}(p.8)

\textbf{Synthesized finding 3}

The third synthesized finding (Personal and environmental background/circumstances can encourage and limit good self-management and general management of T2DM) was generated from 11 findings, which were merged into four categories (Figure 4). Personal background includes a person’s heritage and their social and economic status. Personal circumstances are difficulties or issues that may impact a person’s ability to accomplish specific tasks, and environmental circumstances include the external resources, conditions, or surroundings that may also impact a person’s ability to accomplish specific tasks. The categories that had a negative impact included barriers to physical activity, comorbidities/medical history, and lack of resources. Personal circumstances, such as perceived benefits of physical activity, had a positive impact on a person’s ability to accomplish certain tasks.

\textbf{Category 3.1: Barriers to physical activity}

Physical activity is one method used for managing T2DM. Although the participants were aware of the benefits of physical activity, they expressed that different factors served as obstacles to physical activity. One factor was not having the time for physical activity due to other responsibilities.

"My work demands many times do not allow me to get home early."\textsuperscript{32}(p.87)

Another factor was safety and well-being during physical activity. Participants did not feel safe traveling to the gym or park to do physical activity because of where they are located. Some environments or places were not safe (possibly due to the high crime rate), and people did not risk going to these places.

"Safety in the area. My husband works and cannot go with me."\textsuperscript{32}(p.87)
Personal and environmental background/circumstances can encourage and limit good self-management and general management of T2DM.

**Barriers to physical activity**
- Overwhelmed by multiple responsibilities from work and home (U)
- Concerns regarding their own safety (U)
- Physical impairments by medical history (U)

**Comorbidities and medical history**
- Most difficult part of having T2DM (U)
- Benefits in daily life activities (U)
- Optimal social benefits (U)
- Optimal physical status (U)
- Positive benefits to health status (U)

**Perceived benefits of physical activity**
- Medical homes were rarely viewed as a primary source of diabetes education or support: lack of educational resources (U)
- Economic impact (U)

**Lack of resources**
- Culturally specific challenges were barriers to effective self-management: limited access to healthy food options/exercise (U)

(T2DM, type 2 diabetes mellitus; U, unequivocal; C, credible)

Figure 4: Synthesized finding 3: personal and environmental background/circumstances can encourage and limit good self-management and general management of T2DM
Category 3.2: Comorbidities and medical history
Due to patients’ comorbidities and medical history, their bodies were limited to certain actions and depended on their conditions or disabilities. As a result of these limitations, patients were unable to be physically active.

“When my back condition or knee does not allow me to do it.”

There were multiple complications associated with T2DM, which affects patients’ bodies in different ways. Because of this, patients’ spirits were dampened and they were not their usual selves.

“It’s not an easy thing. Having diabetes contributes to other sickness and it’s not nice, because it become like a part of you gone.”

Category 3.3: Perceived benefits of physical activity
Physical activity is an essential form of T2DM management, and all patients who are able should be physically active. Patients reported that because of the benefits of physical activity, they were more eager to continue being physically active. Patients were able to carry out more tasks in their daily activities, and their physical well-being was better.

“I am less tired in my other activities.”

Being physically active allowed patients to form friendships, which formed clubs. As a result of the social benefits, more patients with T2DM were encouraged to become physically active.

“When I exercised outside my house I met new friends and I joined a jogging club.”

Category 3.4: Lack of resources
There was a consensus among the patients that many resources to aid in T2DM management were not available. There was a lack of financial, educational, and healthy food options, as well as exercise or physical activity options, which all hindered proper T2DM management. It is essential that patients, doctors, and carers are educated about T2DM and its management. Patients highlighted the lack of educational resources for patients, especially immediately after diagnosis.

“I think there should be better resources for diabetics. Once you’re diagnosed there should be a place that you can go to for regular classes and monitoring. I can’t believe we don’t have that in this day and age. There isn’t even a dietician there (doctor’s office).”

Patients were knowledgeable of the healthy food options; however, they could not afford them because they were too expensive. The lack of these resources promoted poor self-management.

“Making the good food choices is hard. They’re simply not available in stores. Well, sometimes. Now, they tell me blueberries is good. I can eat that. But when you find that, it’s five dollars for a little bag so...”

Synthesized finding 4
The fourth synthesized finding (Psychological factors that influence patients’ actions towards management of T2DM) was generated from 13 findings, which were merged into five categories (Figure 5): low mood and low motivation, perception of the disease/complications, stress, high mood and high motivation and fear of the disease/complications as a motivator. Psychological factors refer to how a person’s thinking influences him or her to seek contentment, resulting in negative or positive results. Categories such as low mood and low motivation, stress, and negative perception of the disease/complications negatively influenced patients’ management of T2DM. The categories that positively influenced management of T2DM were high mood and high motivation, and fear of the disease/complications as a motivator.

Category 4.1: Low mood and low motivation
Participants reported an overall lack of motivation and interest when focusing on obstacles to physical activity. Because people were not motivated to be physically active, they were unable to use this form of management for T2DM, which is as important as any other form of management.

“Lack of motivation and interest.”
Due to the toll T2DM and its complications has on the human body, participants were somewhat defeated. Patients also expressed how much they have been suffering and the psychological impact that the disease had on them.

“Ah, diabetes... Whatever I could do first, I cannot do it again... It burdens my body. It’s against the body. Walking — I cannot walk straight... The most difficult part is over the body... poor circulation too... It look like it caused that too... me fall down, as me step, me fall down... Yes, the nerves gone right out... It burn me under the heel and stick me... It can come anywhere... affecting my foot bottom and my heel. It burning me, burning me, burning like pepper... and the eyes, man, I don’t know if it’s a glaucoma get in the eye and eat out the eye... I can’t tell you how long I am suffering, suffering...”

Category 4.2: Perception of the disease/complications

Patients showed concerns about the complications associated with T2DM and the impact it would have on their lives. Their perceptions of the disease, as well as the public perception of the disease, prevented them from seeking appropriate care. Patients were also afraid to visit the doctor for check-ups because they were afraid of the doctors and the unknown of their disease (ie, information/results they were going to receive).

“them don’t go for check-ups because them afraid from the doctor.”

Social stigma was expressed as a barrier to effective T2DM self-management. Most sicknesses come with a stigma attached to them. People’s reaction to finding out someone has diabetes led to patients becoming uncomfortable and secretive about their disease. Patients expressed that a stigma was built around the disease because it was not discussed out in the open.

“I think this needs to be more out in the open. Because you can have diabetes and control it and do everything that everybody else does. But it’s so secretive... everyone will treat you like you’re dying. There’s a stigma attached, yes. To being diabetic or having to take medicine for it.”

The community’s reaction towards patients with T2DM showed that they did not have enough information or understanding about the disease. People tend to be afraid of things they do not know or understand.

Patients who did not want to accept that they had T2DM were in denial, and because they did not acknowledge the disease, they did not attempt to manage it. Patients thought it was easier to ignore the signs rather than deal with the problem.

“I don’t want to think about it (having diabetes). Like I say, I don’t say I’m a diabetic. I only say my sugar is a little elevated. I don’t even want to call the word.”

Category 4.3: Stress

Patients reported finding it stressful to adhere to the recommended diet due to accessibility and availability of foods. Patients also reported finding it stressful to cope with knowledge that not adhering to medication regimens would result in complications associated with T2DM, including death. As a result of these stressful scenarios, patients reported not thinking about or dealing with their T2DM management as coping techniques.

“If you have AIDS, HIV, you have treatment. [handclap] Done. If you are in treatment, you can live 100 years and die of something else—you will not die of that [HIV]. But with diabetes, a person without treatment can be sure that one day, he will lose his vision. Through diabetes comes the famous diabetic foot or kidney problems. It is a tragedy for them and their family because now you have lost everything.”

“Living with diabetes is worse... when you think about it. It is worse because you can even die of depression if you think about that, and [it can affect] your heart and all that.”

Category 4.4: High mood and high motivation

Although some patients’ moods and motivations had a negative impact on their T2DM management, some patients reported high mood and motivation.
Figure 5: Synthesized finding 4: psychological factors that influence patient's actions towards management of T2DM

(T2DM, type 2 diabetes mellitus; U, unequivocal; C, credible)
Having T2DM and being educated on T2DM made patients more eager to live a healthier lifestyle, made them more eager to get better, and reduced complications. As a result, patients ensured that they continued their self-management regimen to stay in good health.

“I feel good and it cheers me up. My self-esteem increases.”

Participants expressed that because of increased knowledge of T2DM they were more motivated to make changes in their lives and manage their diabetes properly.

The motivation that came after increased knowledge was exemplified by Ophelia who said, “So me gets—me finds out now. So me have diabetes. And from thence on, me started the change. Them give me a diet sheet. And them tell me what to eat, and what not to eat, and so-and-so forth. But you know sometime you may eat what you are not supposed to eat.”

Category 4.5: Fear of the disease/complications as a motivator

Patients reported that the fear of poor health outcomes if T2DM was not managed correctly had motivated them to manage their T2DM properly. Participants expressed that they would continue to take good care of themselves so that they would not have to suffer or develop any complications.

“And feeling healthy, that is the best. My mother, when she was alive, she used to take care of us, and she take care of herself until she leave us. So that's why I said I would take good care of myself just like my mom, and also she take care of her mother.”

There are many complications associated with T2DM, such as loss of limbs or eyesight. The participants expressed the fear of this happening to them. This fear motivated them to try to manage their food intake and eat healthier foods, as well as stop unhealthy habits, such as drinking alcohol.

“I see the struggle when people lose limbs. I play the flute and don’t want to lose fingers so I changed everything . . . I stopped the alcohol. And I cut back on all the starchy, Caribbean foods. You have to make up your mind that you’re going to back out of all those foods you grew up with. I grow my own vegetables now. And that is another way I can get exercise.”

“My concern about having diabetes is when you read up on it, you’ll realize that if you don’t take care of yourself, you can lose a limb and you can even go blind.”

Synthesized finding 5

The fifth synthesized finding (Psychological factors and their influence on patients’ adherence to T2DM management) was the result of 17 findings, which were merged into three categories (Figure 6). Personal attitudes are a way of thinking or feeling that is usually redirected or expressed through a person’s behavior. Both negative and positive attitudes are formed based on values, beliefs, and feelings. However, negative attitudes should be avoided.

Category 5.1: Positive personal attitudes and thoughts towards adherence to good T2DM management

Patients reported that they changed their eating habits to ensure that they align with their T2DM management. They did this to avoid depending heavily on medication. Due to their positive attitude towards T2DM management, they found it easy to succeed in their T2DM management and limit the associated complications.

“My doctor told me what to eat, so I just stick by that. It’s not hard as I cut down on portion size. Good eating habit, I can tell you. And why I know as I talk about the medication, I was following people and see, you can’t get up every day just taking tablet, taking tablet.”

Patients also ensured that managing their T2DM took priority over everything else. They went to their doctor’s appointments, followed the doctor’s instructions, and saved their money to purchase their prescribed medications, which were expensive.

“...the medications are very expensive. No matter how small it is, whatever, I have to make sure
Figure 6: Synthesized finding 5: psychological factors and their influence on patients’ adherence to T2DM management

(T2DM, type 2 diabetes mellitus; U, unequivocal; C, credible)
Some patients were able to adhere to a good T2DM management through not thinking about their illness and keeping busy in their lives. They used these coping strategies to maintain diabetic control and live normal, happy lives.

“If you are working, your mind will be busy and you won’t remember that you’re sick. You’ll live your normal life.”

Category 5.2: Positive impact of religion
Participants found comfort and emotional support by praying to God. They viewed praying to God as a way of having a conversation to get advice and to feel better about their T2DM condition. It lifted their spirits, making it easier to manage their T2DM.

“If you say you prayers and you go to yuh bedside and you pray you does get yuh own little thing. Sometimes one leaf of bush they will tell you to boil and you know! You feel much better.”

“You pray a lot about your condition. A way to get comfort.”

Category 5.3: Negative personal attitude towards adherence to good T2DM management
Patients struggled to adhere to the management of their T2DM. They did not believe in the prescribed medicines, and so they either did not use them or used them irregularly in combination with their own plant/bush remedies. Taking prescribed medicines, monitoring blood glucose levels, and sticking to the regimen are essential aspects of T2DM management, which were dismissed by patients because of their attitudes.

“The Doctor medicine is useful ... I take it today, tomorrow I take the bush.”

Discussion
This is the first systematic review to summarize the barriers and facilitators to the management of T2DM in people from the Caribbean region. After an extensive search identified 1058 potential articles, eight papers were included in the review, although only seven were included in the meta-aggregation. Overall, the included studies were of high methodological quality and focused on patient-level barriers and facilitators that affected different aspects of T2DM management (including self-management) in five Caribbean countries. However, no findings were identified that related to T2DM management from the perspective of family/carers or health care professionals. The barriers and facilitators identified were the following: cultural demands and pressures impact self-management and general care of T2DM; support systems’ influence on the general management of T2DM; personal and environmental background/circumstances can encourage and limit good self-management and general management of T2DM; psychological factors that influence patients’ actions towards the management of T2DM; and psychological factors and their influence on patients’ adherence to T2DM management. Four of the synthesized findings were considered to be both barriers and facilitators in some areas, including support systems, personal and environmental background/circumstances, and influence of psychological factors on patients’ actions and adherence to T2DM management. Among these were themes such as moods and motivation, stress, attitudes towards adherence, medical history, availability of resources, physical activity benefits, and support.

Physical activity is an integral part of T2DM management. This review showed that the multiple benefits of physical activity, such as improvement in patients’ overall physical and mental health, encouraged patients to continue being physically active. A study conducted in India also revealed that the awareness of the benefits of exercise also emerged as a facilitator. Despite the benefits of physical activity being a facilitator, there were also barriers. Patients’ concerns regarding their safety and competing priorities made it difficult to be physically active. Patients expressed that there was too much going on in their lives to fit any physical activity into their schedule. This theme was supported by other studies carried out in South Asian populations. A study conducted in South Asia found that fear of injury or worsening health with exercise was a barrier to T2DM management, consistent with the findings from this review. In South Asia populations, the lack of gender-specific facilities for physical activity was a barrier to T2DM management, although this was not consistent with
In addition, unsafe environments for physical activity was also a barrier to T2DM management in South Asia, as participants did not want to risk their lives or risk getting hurt going to gyms located in dangerous areas. This review found that cultural practices negatively influence patients’ diets, and two other studies highlighting the barriers to self-management and management of T2DM (carried out in the United States and United Kingdom, respectively) supported this finding. Cultural demands and pressures included patients’ religious beliefs as well as their belief that traditional foods did not help with T2DM management. This result was consistent with one of the overall themes from a study from South Asia, which found that social pressure to continue with a traditional diet and misconceptions on the components of diabetic diet were barriers to T2DM management. This review showed that there were many misconceptions about T2DM and its management. Some findings showed that what patients believed about T2DM management was false or had no scientific evidence to support its benefit. Some of the T2DM management regimens followed by patients may have been doing more harm than good.

People’s perception of the disease and its complications was a barrier to T2DM management, as it impacted patients’ actions towards their T2DM management. Stigma is usually associated with a lack of knowledge, as it is usually present when people develop their own perceptions and when they lack understanding. People tend to be afraid of what they do not understand or have no knowledge about, and as a result, they do not always adapt to change. However, there are cases where patients do adapt and choose to follow appropriate dietary advice and exercise regimens, which facilitate their T2DM management. This finding was supported by other studies across the world, including South Asia, the United States, and the United Kingdom.

Factors that influenced patients actions towards T2DM management, such as fear, were presented as a barrier and facilitator to T2DM management. Fear as a barrier was supported by Byers et al.; however, it did not support the findings of fear being a facilitator – participants expressed that the fear of complications was not enough to motivate them to adhere to good T2DM management. Patients have also used their moods and self-motivation to both negatively and positively influence their T2DM management. Barriers entailed patients not wanting to control their diet and having no motivation to keep healthy. Facilitators entailed patients wanting to live and stay healthy. Stress was caused by other barriers such as food access and availability, low moods, and perceptions of medications. As a result, patients did not focus on managing their T2DM as a way to cope with the stress associated with the disease.

Participants displayed negative attitudes towards adherence to good management, which was identified as a barrier. Non-compliance consisted of patients not following doctors’ orders or not using prescribed medications to manage their T2DM. In a study conducted in the United States, communication with health care providers was not specifically identified as a synthesized finding; however, patients’ non-compliance to prescribed medication was a barrier to T2DM management. Similar themes were found in another study from South Asia, such as communication discordance with health care providers, non-compliance to participate in self-management, lack of understanding about medication management, and preference for folk therapy and phytotherapy (herbal/traditional medicines). Some studies showed that non-compliance may result from lack of trust between health care professionals and patients, patients’ lack of knowledge/education, patients’ own beliefs not coinciding with what was told or given by health care professionals, and patients not able to follow the regimen or not able to afford the appropriate healthy food or services. In this study, there was no illustration or theme that highlighted trust in health care providers as a facilitator or lack of trust in health care providers as a barrier to T2DM management. However, this does not mean that they do not exist, as one study showed that trust in health care providers was a facilitator to T2DM management. There were some positive attitudes towards T2DM management adherence where patients expressed the importance of following the doctors’ orders, taking their medications, adopting a diabetic diet, and ensuring that they were managing their T2DM to the best of their ability. Patients also expressed that not dwelling on or not always thinking about the disease allowed them to maintain a normal lifestyle, which made them more productive and helped with the associated stress of T2DM.
Support was identified as both a barrier and a facilitator to T2DM management, depending on the circumstances. Support as a facilitator was the richer finding with the most themes and many illustrations to support them. It also outweighed support as a barrier by having more positive outcomes than adverse outcomes with regards to supports’ influence on T2DM management. The facilitators proved that there was support given to patients from immediate and extended family, spouses, friends, neighbors, and health care professionals. Family support as a facilitator was consistent in both the Caribbean and South Asia. There was emotional, physical, informational, and instrumental support provided to patients with T2DM, all of which helped with their disease management. A driving force of this support may have been that these persons cared for the patients and wanted them to have the best possible health outcome. Studies have asserted the importance of support as a barrier and a facilitator. However, it is important to note that there were no comments or evidence that the support from health care professionals had a negative impact on T2DM management.

Patients also identified some barriers associated with support. One of these barriers was a lack of emotional support from a cohabitating partner, which may have been anyone living in the patient’s household with them. Another barrier was that support from friends and neighbours were less prominent in the long-term management stage than the support from partners and providers. One reason for these barriers could be the lack of knowledge on how to provide support. It could be that persons do not know what is required of them when providing support, how long support is needed, and how to give support correctly. It is not known which type of support was given more often or who gave more support, but the results show that support was more of a facilitator to T2DM management than a barrier. A study from the United States identified a lack of active support groups as a barrier to T2DM management. This review did not identify any illustrations or themes where support groups were mentioned. This may be because there are none available or patients are not aware of them.

Knowledge was identified as a barrier and a facilitator to T2DM management. Increased knowledge of T2DM was identified as a facilitator; it motivated patients to manage their T2DM properly. A study from the United States reiterated that personal understanding of T2DM was a facilitator to T2DM management; however, this study showed an overall lack of educational resources on T2DM and its management. The lack of educational resources may have been the result of health care professionals not knowing what information to deliver to patients or use of inappropriate sources to deliver the information. Although one finding stated that some patients acquired knowledge about diabetes, it was after they began treatment. Ideally, information on T2DM should have been provided upon diagnosis, although this was not the case. Although knowledge was not identified as a barrier to T2DM management in this review, inadequate knowledge was recognized as an important barrier to positive lifestyle changes and glycemic changes in one study conducted in Jamaica. This study, however, contained no supporting findings. Lack of knowledge may result in patients’ non-compliance. Studies from South Asia, the United States, and the United Kingdom also identified lack of knowledge as a barrier to T2DM management. The language barrier between patients and health care providers was identified as a barrier to T2DM in studies conducted in South Asia and the United States but not in the Caribbean. Language may not have been a barrier in the Caribbean because the health care providers speak the first language of the country, which in most cases is English. In countries in South Asia and in the United States, patients and health care providers may speak different languages because they are more likely to have different backgrounds.

The study from the United States showed that a lack of other resources in the local community was a barrier to T2DM management. In the Caribbean, lack of resources such as affordable healthy foods and medicines and poor infrastructure for exercise were additional factors that were barriers to T2DM management. Despite patients wanting to follow good T2DM management practices, the resources were not available. For example, although healthy foods are available in the Caribbean, people could not access them due to the high cost of living.

Most of the themes and categories from this review are somewhat connected. For example, being educated or having knowledge about T2DM may affect or change people’s beliefs, views, and understanding of the disease’s management. It may
minimize stress and can determine whether patients comply with their doctor’s instructions, adhere to their prescribed medications, and understand what is required when giving support. This shows that knowledge can eliminate more than one barrier. There were many similarities in the barriers and facilitators to T2DM management when compared to the literature. Although some themes such as “personal understanding of T2DM” and “knowledge of T2DM” were described differently or had a different heading, their illustrations were similar, and they all fell under the same category/theme. It is evident that many of the barriers faced in the Caribbean are being faced in other countries and regions, such as South Asia, the United States, and the United Kingdom. However, there were some barriers identified by patients in other geographical regions that were not identified by patients in the Caribbean. Patients in the Caribbean did not express the lack of time spent with physicians and empathy as barriers to T2DM management, but these barriers were identified in South Asia. Another barrier to T2DM management identified in South Asia was cold weather as a hindrance to physical activity, which was not a barrier in the Caribbean. These differences may be attributed to geographical location, different cultural backgrounds, different health care systems and care provided, available resources to health care providers and patients, and the country’s economy.

**Strengths and limitations**

This study was conducted using two independent reviewers throughout, which helped to reduced bias. The levels of confidence in the synthesized findings generated were moderate to high. It showed that the results were reliable, accurate, and trustworthy. Out of 28 islands in the Caribbean, the eight studies in this systematic review were conducted in five Caribbean islands (Puerto Rico, Saint Vincent, Jamaica, Dominican Republic, and the U.S. Virgin Islands). Although the islands all share similar culture on the surface, they all differ in their unique way. Every island has been influenced by its colonizers or immigrants, and as a result, the Caribbean comprises different ethnicities, and each island ethnic makeup is different. Every island has its own unique national dish consisting of different ingredients that are grown or can be found on all the islands. This shows that although the islands differ in certain aspects, their staple foods are the same. It is recommended that further research is needed in other Caribbean countries so that a full picture of the barriers and facilitators of T2DM management can be presented.

There were no studies that covered the views of health care providers and family/carers. It is important to have their views as these are the people directly involved in the patients’ T2DM management. Whether it may be family/carers assisting with medication regimens or health care professionals providing care, they all have an essential role in ensuring proper T2DM management. Therefore, their views on barriers and facilitators to T2DM management is equally important as those the patients’. Another limitation of this study was the elimination of 11 papers due to the unavailability of full-text papers; six of these papers were abstracts or poster presentations. These papers may have been beneficial to the study by revealing additional patient-reported barriers and facilitators.

**Implications**

Firstly, the moderate to high confidence in the qualitative results of this review are pivotal in the successful management of patients with T2DM in the Caribbean. Secondly, with the information provided, patients will now be able to relate to other patients and have a clearer understanding of what will help them manage their disease (eg, knowing which actions, beliefs, or personal traits are classified as harmful to their health and which are beneficial). Thirdly, the findings will allow patients to be more effective and efficient in communicating with health care professionals to decrease non-compliance and non-adherence. It is also imperative that patients are given the appropriate resources and guidance to address the barriers that they face and to promote the facilitators, all through education. This may include high-quality T2DM management guidelines or interventions. Fourthly, the results from this systematic review will allow policy makers to develop evidence-based recommendations or policies to address management of T2DM. Policy makers should ensure that resources are available and affordable, including healthy foods, medicines, and safe environments for exercise. Additionally, policies should be developed to provide supportive environments for persons with T2DM and to provide education on appropriate diet, medications, and
other studies conducted in the United States showed that tailored advice and personal guidance are more productive and more consistently associated with good health outcomes and behavior change. Lastly, although all the studies were of high quality, the critical appraisal highlighted the common poor reporting of the influence of the researcher on the research among the studies.

Due to the history of colonization by many nations and immigrants, the Caribbean region is a large multi-cultural/multi-ethnic area. The Caribbean people are mostly descendants from different ethnic backgrounds such as African, European, Asian, Taíno, and Caribs East Indian. This indicates that the region is not composed of one ethnicity and one culture; therefore, when health care professionals are planning ways to eliminate barriers and increase facilitators, these differences should be taken into consideration. As the findings were from patients with T2DM in the Caribbean, their views and perspectives may be different from other populations, such as health care professionals and family/carers. However, because health care professionals and family/carers are usually the ones caring for these patients, they would be able to assist in promoting the facilitators and tackling the barriers identified based on this evidence.

Conclusion
This was the first systematic review to explore the barriers and facilitators to T2DM management in people from the Caribbean. Overall, the findings showed that the barriers of T2DM management among patients in the Caribbean are as follows:

Table 4: Grades of recommendations for practice specific to the Caribbean

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy makers should consider reintroducing healthy diet plans or healthy food options to patients with T2DM using more of their native food.</td>
<td>A</td>
</tr>
<tr>
<td>Societies should be educated on T2DM with the aim of reducing the stigma associated with T2DM.</td>
<td>A</td>
</tr>
<tr>
<td>Policy makers should consider implementing accessible and safe physical activity programs for all types of patients with T2DM.</td>
<td>A</td>
</tr>
<tr>
<td>The governments should consider ensuring that educational resources and healthy food options are available to patients with T2DM.</td>
<td>A</td>
</tr>
<tr>
<td>The governments or the ministries of health should consider the accessibility and affordability of healthy foods and medications for patients with T2DM, by lowering the prices or making them free.</td>
<td>A</td>
</tr>
<tr>
<td>Long-term support (physical and emotional) should be considered and provided by family, friends, and spouses to patients with T2DM.</td>
<td>A</td>
</tr>
<tr>
<td>Educational support should be considered for family, friends, and spouses who live with or care for patients with T2DM.</td>
<td>A</td>
</tr>
<tr>
<td>Policy makers should consider developing health promotion activities based on physical activity targeting patients with T2DM who struggle to be physically active due to busy lifestyles. These activities should be tailored to incorporate into their daily lives.</td>
<td>A</td>
</tr>
<tr>
<td>Patients with pre-existing comorbidities or a medical history that may impact or may be impacted by T2DM should be given educational resources by their health care providers. The educational resources should entail how to manage their comorbidities with T2DM.</td>
<td>A</td>
</tr>
<tr>
<td>The governments should consider providing professional psychological help/assistance to patients with T2DM who are experiencing any psychological issues.</td>
<td>A</td>
</tr>
<tr>
<td>Patients with T2DM should be educated on T2DM, with special focus on the misconceptions (which also lead to fear) and possible complications associated with the disease and different ways to manage it.</td>
<td>A</td>
</tr>
</tbody>
</table>

T2DM, type 2 diabetes mellitus.
cultural demands and pressures impacting self-management and general care of T2D; poor support from the most immediate influences on the general management of T2DM; personal and environmental background/circumstances can encourage and limit good management of T2DM; and the negative influence of psychological factors on the patient’s actions towards T2DM management and their adherence to treatments. The facilitators to T2DM management amongst patients in the Caribbean are as follows: good support from the most immediate influences; personal background and circumstances that encourage good self-management and general management of T2DM; and the positive influence of psychological factors on patients’ actions towards T2DM management and adherence to treatments. Further research is needed to explore the views and experiences of T2DM health care professionals and families/carers of people with T2DM so that a more precise picture regarding the barriers and facilitators to the management of T2DM in people from the Caribbean is available.

Recommendation for practice
Based on the evidence highlighted in the Summary of Findings, the JBI grades of recommendations were used to assist in the development of the recommendations shown in Table 4. A binary system for grading the recommendations was used: a strong recommendation (Grade A) or a weak recommendation (Grade B).70

Recommendation for research
Through the characteristics of data extraction, it was evident that there was an adequate level of reporting of the methodology in more than half of the studies. Some of the characteristics were not reported, and others were not reported in detail. It is recommended that researchers ensure that their methodology is thorough and includes all the necessary information. Although a few qualitative studies were identified, there should be more qualitative studies on T2DM management conducted in more Caribbean countries so that a broader range of islands can be included in the summary of evidence. Future qualitative studies should also include health care professionals’ and carers’ perspectives as this systematic review was only able to synthesize findings from patients’ perspectives. The experiences, views, and perspectives from other individuals may identify more barriers and facilitators that were not identified in this review.

Acknowledgments
Winifred Ekezie, a PhD Epidemiology and Public Health student at the University of Nottingham (UK), for her contribution to the screening of studies.

Funding
This study was funded internally by the University of Nottingham. The funding agency had no role in conducting the systematic review or writing the manuscript.

References


Appendix I: Search strategy

Published studies
MEDLINE (Ovid)
1946–11th March, 2020; 232 results
1. exp diabetes mellitus, type 2/
2. exp diabetes complications/
3. (MODY or NIDDM or T2DM).tw,ot.
5. 1 or 2 or 3 or 4
6. (barrier* or impediment* or challenge* or hindrance* or obstacle* or hurdle* or obstruction* or deterrent* or facilitator*).mp.
7. exp qualitative research/
8. exp interview/
9. exp focus groups/
10. exp cross-sectional studies/
11. exp surveys and questionnaires/
12. (qualitative or interview* or focus group* or cross-sectional or cross sectional or survey*).mp.
13. 6 or 7 or 8 or 9 or 10 or 11 or 12
14. exp Caribbean Region/
15. (Trinidad and Tobago).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
16. exp Antigua and Barbuda/
17. exp Barbados/
18. exp Martinique/
19. exp Dominican Republic/
20. exp Haiti/
21. exp Jamaica/
22. exp Puerto Rico/
23. exp Cuba/
24. exp Bahamas/
25. exp Dominica/
26. exp Saint Lucia/
27. exp Grenada/
28. exp Guadeloupe/
29. exp Curacao/
30. exp Aruba/
31. exp Netherlands Antilles/
32. exp United States Virgin Islands/
33. exp British Virgin Islands/
34. exp Saint Kitts and Nevis/
35. exp Sint Maarten/
36. exp West Indies/
37. exp Saint Vincent and the Grenadines/
38. ((Caribbean) or (Trinidad) or (Tobago) or (Antigua) or (Barbuda) or (Barbados) or (Martinique) or (Dominican Republic) or (Haiti) or (Hispianola) or (Jamaica) or (Puerto Rico) or (Cuba) or (Bahamas) or (Dominica) or (Saint Lucia) or (Grenada) or (Guadeloupe) or (Curacao) or (Bonaire) or (Aruba) or (Saba) or (Saint Eustatius) or (Virgin Islands) or (Tortola) or (Virgin Gorda) or (Jost Van Dyke) or (Anegada) or (Saint Croix) or (Saint Thomas) or (Saint John) or (Saint Kitts) or (Nevis) or (Saint
Christopher) or (Sombrero) or (Saint Martin) or (Sint Maarten) or (West Indies) or (Saint Vincent) or
(Grenadines) or (Eastern Caribbean) or (Greater Antilles) or (Lesser Antilles) or (Leeward Islands) or
(Windward Islands) or (Caribbean Islands) or (Cayman Islands) or (Montserrat) or (Turks and Câicos
Islands) or (Anguilla) or (Saint Barthelemy)).mp.
39. 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or
32 or 33 or 34 or 35 or 36 or 37 or 38
40. 5 and 13 and 39

Embase (Ovid)
1947–11th March, 2020; 308 results
1. type 2 diabetes.mp. or non insulin dependent diabetes mellitus/
2. diabetes complications.mp. or diabetic complications/
3. (MODY or NIDDM or T2DM).mp. [mp=title abstract, heading word, drug trade name, original title,
device manufacturer, drug manufacturer, device trade name, key word, floating subheading word,
candidate term word]
4. (MODY or NIDDM or T2DM).tw,ot.
5. ((typ? 2 or typ? II or typ?2 or typ?II) adj diabet$).tw,ot.
6. 1 or 2 or 3 or 4 or 5
7. (barrier* or impediment* or challenge* or hindrance* or obstacle* or hurdle* or obstruction* or
deterrent* or facilitator*).mp.
8. qualitative research.mp. or qualitative research/
9. interview.mp. or interview/
10. focus groups.mp. or information processing/
11. cross-sectional studies.mp. or cross-sectional study/
12. (surveys and questionnaires).mp. [mp=title, abstract, heading word, drug trade name, original title,
device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word,
candidate term word]
13. (qualitative or interview* or focus group* or cross-sectional or cross sectional or survey*).mp.
14. 7 or 8 or 9 or 10 or 11 or 12 or 13
15. Caribbean Region.mp. or Caribbean/
16. (Trinidad and Tobago).mp. [mp=title, abstract, heading word, drug trade name, original title,device
manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate
term word]
17. (Antigua and Barbuda).mp. [mp=title, abstract, heading word, drug trade name, original title,device
manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate
term word]
18. Barbados.mp. or Barbados/
19. Martinique.mp. or Martinique/
20. Dominican Republic.mp. or Dominican Republic/
21. Haiti.mp. or Haiti/
22. Jamaica.mp. or Jamaica/
23. Puerto Rico.mp. or Puerto Rico/
24. Cuba.mp. or Cuba/
25. Bahamas.mp. or Bahamas/
26. “Dominican (Dominica)”/ or Dominica.mp. or Dominica/
27. Saint Lucia.mp. or Saint Lucia/
28. Grenada.mp. or Grenada/
29. Guadeloupe.mp. or Guadeloupe/
30. Curacao.mp. or Curacao/
31. Aruba.mp. or Aruba/
32. Netherlands Antilles.mp. or Netherlands Antilles/
33. United States Virgin Islands.mp. or “Virgin Islands (U.S.)”/
34. British Virgin Islands.mp. or “Virgin Islands (British)”/
35. (Saint Kitts and Nevis).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
36. Sint Maarten.mp. or “Saint Martin (Dutch)”/
37. West Indies.mp. or Caribbean Islands/
38. (Saint Vincent and the Grenadines).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
39. ((Caribbean) or (Trinidad) or (Tobago) or (Antigua) or (Barbuda) or (Barbados) or (Martinique) or (Dominican Republic) or (Haiti) or (Hispaniola) or (Jamaica) or (Puerto Rico) or (Cuba) or (Bahamas) or (Dominica) or (Saint Lucia) or (Grenada) or (Guadeloupe) or (Curacao) or (Bonaire) or (Aruba) or (Saba) or (Saint Eustatius) or (Virgin Islands) or (Tortola) or (Virgin Gorda) or (Jost Van Dyke) or (Anegada) or (Saint Croix) or (Saint Thomas) or (Saint John) or (Saint Kitts) or (Nevis) or (Saint Christopher) or (Sombrero) or (Saint Martin) or (Sint Maarten) or (West Indies) or (Saint Vincent) or (Grenadines) or (Eastern Caribbean) or (Greater Antilles) or (Lesser Antilles) or (Leeward Islands) or (Windward Islands) or (Caribbean Islands) or (Cayman Islands) or (Montserrat) or (Turks and Caicos Islands) or (Anguilla) or (Saint Barthelemy)).mp.
40. 15 or 16 or 17 or 18 or 20 or 21 or 22 or 23 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39
41. 6 and 14 and 40

CINAHL (EBSCOhost)
1961–11th March, 2020; 233 results
1. (MH “type 2 diabetes mellitus”) or (MH “type 2 diabetes”) or (MH “diabetes type 2”)
2. (MH “diabetes complications”)
3. MW (“MODY” or “NIDDM” or “T2DM”)
4. MW (typ? 2 or typ? II or typ?2 or typ?II (N diabet$))
5. 1 or 2 or 3 or 4 / S1
6. TX (barrier* or impediment* or challenge* or hindrance* or obstacle* or hurdle* or obstruction* or deterrent* or facilitator*)
7. (MH “qualitative research”)
8. (MH “interview”)
9. (MH “focus group”)
10. (MH “cross-sectional studies”)
11. (MH “surveys and questionnaires”)
12. TX (qualitative or interview* or focus group* or cross-sectional or cross sectional or survey*)
13. 6 or 7 or 8 or 9 or 10 or 11 or 12 / S2
14. TX ((Caribbean) or (Trinidad) or (Tobago) or (Antigua) or (Barbuda) or (Barbados) or (Martinique) or (Dominican Republic) or (Haiti) or (Hispaniola) or (Jamaica) or (Puerto Rico) or (Cuba) or (Bahamas) or (Dominica) or (Saint Lucia) or (Grenada) or (Guadeloupe) or (Curacao) or (Bonaire) or (Aruba) or (Saba) or (Saint Eustatius) or (Virgin Islands) or (Tortola) or (Virgin Gorda) or (Jost Van Dyke) or (Anegada) or (Saint Croix) or (Saint Thomas) or (Saint John) or (Saint Kitts) or (Nevis) or (Saint Christopher) or (Sombrero) or (Saint Martin) or (Sint Maarten) or (West Indies) or (Saint Vincent) or (Grenadines) or (Eastern Caribbean) or (Greater Antilles) or (Lesser Antilles) or (Leeward Islands) or (Windward Islands) or (Caribbean Islands) or (Cayman Islands) or (Montserrat) or (Turks and Caicos Islands) or (Anguilla) or (Saint Barthelemy))
SYSTEMATIC REVIEW

A.L. Nixon et al.

15. MH ((Caribbean) or (Trinidad) or (Antigua) or (Barbuda) or (Barbados) or (Martinique) or (Dominican Republic) or (Haiti) or (Hispaniola) or (Jamaica) or (Puerto Rico) or (Cuba) or (Bahamas) or (Dominica) or (Saint Lucia) or (Grenada) or (Guadeloupe) or (Curacao) or (Bonaire) or (Aruba) or (Saba) or (Saint Eustatius) or (Virgin Islands) or (Tortola) or (Virgin Gorda) or (Jost Van Dyke) or (Anegada) or (Saint Croix) or (Saint Thomas) or (Saint John) or (Saint Kitts) or (Nevis) or (Saint Christopher) or (Sombrero) or (Saint Martin) or (Sint Maarten) or (West Indies) or (Saint Vincent) or (Grenadines) or (Eastern Caribbean) or (Greater Antilles) or (Lesser Antilles) or (Leeward Islands) or (Windward Islands) or (Caribbean Islands) or (Cayman Islands) or (Montserrat) or (Turks and Caicos Islands) or (Anguilla) or (Saint Barthelemy))

16. 14 or 15 / S3

17. 5 and 13 and 16 / S1 and S2 and S3

PsycINFO (Ovid)

1806–11th March, 2020; 163 results

1. Type 2 diabetes.mp. or Type 2 Diabetes/
2. exp Type 2 Diabetes/ or diabetes mellitus, type 2.mp.
3. (MODY or NIDDM or T2DM).tw,ot.
4. exp Type 2 Diabetes/ or diabetes complications.mp.
5. ((typ? 2 or typ? II or typ?2 or typ?II) adj diabet).tw,ot.
6. 1 or 2 or 3 or 4 or 5
7. (barrier* or impediment* or challenge* or hindrance* or obstacle* or hurdle* or obstruction* or deterrent* or facilitator*).mp.
8. exp qualitative research/
9. exp interview/
10. exp Group Discussion/
11. exp Group Discussion/ or exp qualitative research/ or focus groups.mp.
12. cross-sectional studies.mp.
13. exp surveys/ and questionnaires/
14. (qualitative or interview* or focus group* or cross-sectional or cross sectional or survey*).mp.
15. 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
16. Caribbean Region.mp.
17. (Trinidad and Tobago).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]
18. (Antigua and Barbuda).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]
20. Exp Countries/ or Martinique.mp.
21. Dominican Republic.mp.
22. Haiti.mp.
23. exp Countries/ or Jamaica.mp.
24. exp Countries/ or Puerto Rico.mp.
25. exp Countries/ or Cuba.mp.
27. Dominica.mp.
28. Saint Lucia.mp.
29. Grenada.mp.
30. Guadeloupe.mp.
31. Curacao.mp.
32. Aruba.mp.
33. Netherlands Antilles.mp.
34. United States Virgin Islands.mp.
35. British Virgin Islands.mp.
36. (Saint Kitts and Nevis).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]
37. Sint Maarten.mp.
38. West Indies.mp.
39. (Saint Vincent and the Grenadines).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]
40. ((Caribbean) or (Trinidad) or (Tobago) or (Antigua) or (Barbuda) or (Barbados) or (Martinique) or (Dominican Republic) or (Haiti) or (Hispaniola) or (Jamaica) or (Puerto Rico) or (Cuba) or (Bahamas) or (Dominica) or (Saint Lucia) or (Grenada) or (Guadeloupe) or (Curacao) or (Bonaire) or (Aruba) or (Saba) or (Saint Eustatius) or (Virgin Islands) or (Tortola) or (Virgin Gorda) or (Jost Van Dyke) or (Anegada) or (Saint Croix) or (Saint Thomas) or (Saint John) or (Saint Kitts) or (Nevis) or (Saint Christopher) or (Sombrero) or (Saint Martin) or (Sint Maarten) or (West Indies) or (Saint Vincent) or (Grenadines) or (Eastern Caribbean) or (Greater Antilles) or (Lesser Antilles) or (Leeward Islands) or (Windward Islands) or (Caribbean Islands) or (Cayman Islands) or (Montserrat) or (Turks and Caicos Islands) or (Anguilla) or (Saint Barthelemy)).mp.
41. 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40
42. 6 and 15 and 41

AMED (Ovid)
1985–11th March, 2020; 1 result
1. exp diabetes mellitus, type 2/
2. exp diabetes complications/
3. (“MODY” or “NIDDM” or “T2DM”).af.
4. ((typ? 2 or typ? II or typ?2 or typ?II) adj diabet*).mp.
5. 1 or 2 or 3 or 4
6. (barrier* or impediment* or challenge* or hindrance* or obstacle* or hurdle* or obstruction* or deterrent* or facilitator*).mp.
7. Research/ or qualitative research.mp.
8. exp interview/
9. focus groups.mp.
10. cross-sectional studies.mp.
11. (surveys and questionnaires).mp. [mp=abstract, heading words, title]
12. (qualitative or interview* or focus group* or cross-sectional or cross sectional or survey*).af.
13. 6 or 7 or 8 or 9 or 10 or 11 or 12
14. Caribbean Region.mp.
15. (Trinidad and Tobago).mp. [mp=abstract, heading words, title]
16. (Antigua and Barbuda).mp. [mp=abstract, heading words, title]
17. Barbados.mp.
18. Martinique.mp.
19. Dominican Republic.mp.
20. Haiti.mp.
22. Puerto Rico.mp.
23. Cuba/ or Cuba.mp.
24. Bahamas.mp.
25. Dominica.mp.
26. Saint Lucia.mp. or Saint Lucia/
27. Grenada.mp.
28. Guadeloupe.mp.
29. Curacao.mp.
30. Aruba.mp.
31. Netherlands Antilles.mp.
32. United States Virgin Islands.mp.
33. British Virgin Islands.mp.
34. (Saint Kitts and Nevis).mp. [mp=abstract, heading words, title]
35. Sint Maarten.mp.
36. West Indies.mp.
37. (Saint Vincent and the Grenadines).mp. [mp=abstract, heading words, title]
38. ((Caribbean) or (Trinidad) or (Tobago) or (Antigua) or (Barbuda) or (Barbados) or (Martinique) or
(Dominican Republic) or (Haiti) or (Hispaniola) or (Jamaica) or (Puerto Rico) or (Cuba) or (Bahamas)
or (Dominica) or (Saint Lucia) or (Grenada) or (Guadeloupe) or (Curacao) or (Bonaire) or (Aruba) or
(Saba) or (Saint Eustatius) or (Virgin Islands) or (Tortola) or (Virgin Gorda) or (Jost Van Dyke) or
(Anegada) or (Saint Croix) or (Saint Thomas) or (Saint John) or (Saint Kitts) or (Nevis) or (Saint
Christopher) or (Sombrero) or (Saint Martin) or (Sint Maarten) or (West Indies) or (Saint Vincent) or
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(Windward Islands) or (Caribbean Islands) or (Cayman Islands) or (Montserrat) or (Turks and Caicos
Islands) or (Anguilla) or (Saint Barthelemy)).mp.
39. 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or
32 or 33 or 34 or 35 or 36 or 37 or 38
40. 5 and 13 and 39

Web of Science
1900–11th March, 2020; 65 results
1. TS=(typ? 2 NEAR/1 diabet? Or diabetes complications or type 2 diabetes mellitus)
2. TS=(barrier” or impediment” or challenge” or hindrance” or obstacle” or hurdle” or obstruction” or
deterrent” or facilitator”)
3. TS=(qualitative or interview” or focus group” or cross-sectional or cross sectional or survey”)
4. #2 or #3
5. TS=(Caribbean count” or Caribbean region or Caribbean islands or Caribbean”)
6. 1 AND 4 AND 5

Scopus (Elsevier)
1960–11th March, 2020; 17 results
TITLE-ABS-KEY (typ? 2 W/1 diabet? Or diabetes complications or type 2 diabetes mellitus) and (TITLE-ABS-KEY (barrier” or impediment” or challenge” or hindrance” or obstacle” or hurdle” or obstruction” or
deterrent” or facilitator”)) or TITLE-ABS-KEY (qualitative or interview” or focus group” or cross-sectional or
cross sectional or survey”)) and TITLE-ABS-KEY (Caribbean count” or Caribbean region or Caribbean
islands or Caribbean”)

Unpublished studies
EThOS
11th March, 2020; 9 results
1. Diabetes
2. Type 2 diabetes
3. Caribbean
OpenGrey
11th March, 2020; 4 results

type 2 diabetes in the Caribbean

ProQuest Dissertations and Theses
11th March, 2020; 26 results

SU((typ? 2 W/1 diabet? Or diabetes complications or type 2 diabetes mellitus)) and SU((barrier* or impediment* or challenge* or hindrance* or obstacle* or hurdle* or obstruction* or deterrent* or facilitator*)) or SU((qualitative or interview* or focus group* or cross-sectional or cross sectional or survey*)) and SU((Caribbean count* or Caribbean region or Caribbean islands or Caribbean*))
### Appendix II: Studies ineligible following full-text review

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foster T, Mowatt L, Mullings J. Knowledge, beliefs and practices of patients with diabetic retinopathy at the University Hospital of the West Indies, Jamaica. J Community Health. 2016;41(3):584–92.</td>
<td>Quantitative studies/cross-sectional surveys that contain no free text</td>
</tr>
<tr>
<td>Roopnarinesingh N, Brennan N, Khan C, Ladenson PW, Hill-Briggs F, Kalyani RR. Barriers to optimal diabetes care in Trinidad and Tobago: a health care Professionals’ perspective. BMC Health Serv Res. 2015;15.</td>
<td>Quantitative studies/cross-sectional surveys that contain no free text</td>
</tr>
<tr>
<td>Hall M, Gordon M. Knowledge of the benefits of exercise and exercise participation in persons living with diabetes in Kingston and St Andrew, Jamaica. West Indian Med J. 2012;61(suppl 6):42.</td>
<td>Quantitative studies/cross-sectional surveys that contain no free text</td>
</tr>
<tr>
<td>Ezenwaka C, Nwankwo C, Onuoha P. Perceptions of practice nurses and dietitians on implementing diabetes self-management education (DSME) in two countries in Africa and the Caribbean. Diabetes. 2015;64(suppl 1):A199.</td>
<td>Quantitative studies/cross-sectional surveys that contain no free text</td>
</tr>
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</table>
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<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
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### (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>In brief. Pract Nurse. 2013;43(7):8.</td>
<td>Ineligible phenomena of interest</td>
</tr>
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</table>
(Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brathwaite A, Brathwaite A, Lemonde M. Exploring health beliefs and</td>
<td>Ineligible phenomena of interest</td>
</tr>
<tr>
<td>practices of Caribbean immigrants in Ontario to prevent type 2</td>
<td></td>
</tr>
<tr>
<td>DeVille-Almond J. Tackling the diabetes epidemic – helping patients</td>
<td>Ineligible phenomena of interest</td>
</tr>
<tr>
<td>Adams O, Carter A. Diabetes and hypertension guidelines and the</td>
<td>Ineligible phenomena of interest</td>
</tr>
<tr>
<td>primary health care practitioner in Barbados: knowledge, attitudes,</td>
<td></td>
</tr>
<tr>
<td>Adams O, Carter A. Knowledge, attitudes, practices, and barriers</td>
<td>Ineligible participants</td>
</tr>
<tr>
<td>reported by patients receiving diabetes and hypertension primary</td>
<td></td>
</tr>
<tr>
<td>Irving R, Mills J, Choo-Kang E, Morrison E, Wright-Pascoe R,</td>
<td>Ineligible participants</td>
</tr>
<tr>
<td>McLaughlin W, et al. Depressive symptoms in children of women with</td>
<td></td>
</tr>
<tr>
<td>Bacon C. Supporting children and young people diagnosed with type 2</td>
<td>Ineligible participants</td>
</tr>
<tr>
<td>Edwards H, Speight J, Bridgman H, Skinner T. The pregnancy journey</td>
<td>Ineligible participants</td>
</tr>
<tr>
<td>for women with type 1 diabetes: a qualitative model from</td>
<td></td>
</tr>
<tr>
<td>Aguero Esquivel M. Assessing barriers that prevent treatment</td>
<td>Full-text not available</td>
</tr>
<tr>
<td>compliance in Hispanic adults with type 2 diabetes mellitus using</td>
<td></td>
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<tr>
<td>focus groups. ProQuest Dissertations and Theses. Buffalo, NY:</td>
<td></td>
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<tr>
<td>D'Youville College; 2014.</td>
<td></td>
</tr>
<tr>
<td>McFarlane S, Bernard O, Less L, Castillo A, Mathurin C. Diabetes in</td>
<td>Full-text not available</td>
</tr>
<tr>
<td>Dyer-Regis B, James K, Mills D. School experiences of students in</td>
<td>Full-text not available</td>
</tr>
<tr>
<td>Londono Agudelo E, Rodriguez Salva A, Seuc Jo A, Diaz Pinera A,</td>
<td>Full-text not available (Abstract)</td>
</tr>
<tr>
<td>Maldonado Cantillo G, Balinides Acosta S. Assessment of diabetes</td>
<td></td>
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<tr>
<td>Salva A, Pinera A, Hernandez L, Roche R. Gaps in the management</td>
<td>Full-text not available (Abstract)</td>
</tr>
<tr>
<td>of type 2 diabetic patients in a metropolitan area of Havana. Trop</td>
<td></td>
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<tr>
<td>Study</td>
<td>Reason for exclusion</td>
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<tr>
<td>---------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Greaves N, Pooransingh S, Samuels T. HIV and Type 2 diabetes: a qualitative exploration of the burden of care experienced and perceived by persons living with multiple co-morbidities in Barbados and Trinidad and Tobago. West Indian Med J. 2018;67(suppl 2):38.</td>
<td>Full-text not available (Abstract)</td>
</tr>
<tr>
<td>Ezenwaka C, Onuoha P, Extavour R. Perceptions of caribbean type 2 diabetes patients towards insulin prescription and therapy. Diabetes. 2019;68(suppl1).</td>
<td>Full-text not available (Poster presentation)</td>
</tr>
</tbody>
</table>
**Study** | **Reason for exclusion**
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Erickson D. Barriers to physical activity in people with type 2 diabetes mellitus enrolled in a worksite disease management program. ProQuest Dissertations and Theses. Chicago: Rush University; 2008. | Ineligible study context
<table>
<thead>
<tr>
<th>Study</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capaldi B. Optimising glycaemic control for patients starting insulin therapy. Nurs Stand. 2007;21(44):49–60.</td>
<td>Ineligible study context</td>
</tr>
</tbody>
</table>
**Study** | **Reason for exclusion**
--- | ---
### Appendix III: Study findings and illustrations

<table>
<thead>
<tr>
<th>Finding 1</th>
<th>Positive benefits to health status (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“Improvess my diabetes condition and blood circulation.” <em>(p.86)</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finding 2</th>
<th>Optimal physical status (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“Physically my body hurts less, I feel lighter and stronger.” <em>(p.86)</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finding 3</th>
<th>Optimal psychological status (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“I feel good and it cheers me up. My self-esteem increases.” <em>(p.86)</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finding 4</th>
<th>Optimal social benefits (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“When I exercised outside my house I met new friends and I joined a jogging club.” <em>(p.86)</em></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Finding 5</th>
<th>Benefits in daily life activities (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“I am less tired in my other activities.” <em>(p.87)</em></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Finding 6</th>
<th>Physical impairments by medical history (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“When my back condition or knee does not allow me to do it.” <em>(p.87)</em></td>
</tr>
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<thead>
<tr>
<th>Finding 7</th>
<th>Overwhelmed by multiple responsibilities from work and home (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“My work demands many times do not allow me to get home early.” <em>(p.87)</em></td>
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</table>

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<thead>
<tr>
<th>Finding 8</th>
<th>Concerns regarding their own safety (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“Safety in the area. My husband works and cannot go with me.” <em>(p.87)</em></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Finding 9</th>
<th>Motivation and self-esteem (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“Lack of motivation and interest.” <em>(p.87)</em></td>
</tr>
</tbody>
</table>

U, unequivocal.

---

Finding 1 | Sources of stress: food access and availability (U)  
Illustration | “There are people who can follow their diet, but many cannot. We often must eat things that we should not eat because [living with] hunger is hard.... [Diabetes] is harder for the poor... I would say it is much harder. I feel bad for those of us that suffer from this illness. Sometimes I go to sleep hungry, and more so when one lives in the countryside. Things in the countryside are very difficult.” *(p.860)*
<table>
<thead>
<tr>
<th>Finding</th>
<th>Sources of stress: medication stress (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“If you have AIDS, HIV, you have treatment. [handclap] Done. If you are in treatment, you can live 100 years and die of something else—you will not die of that [HIV]. But with diabetes, a person without treatment can be sure that one day, he will lose his vision. Through diabetes comes the famous diabetic foot or kidney problems. It is a tragedy for them and their family because now you have lost everything.”&lt;sup&gt;(p.860)&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finding</th>
<th>Sources of stress: stress-induced stress (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“[Living with diabetes] is worse... when you think about it. It is worse because you can even die of depression if you think about that, and [it can affect] your heart and all that.”&lt;sup&gt;(p.861)&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finding</th>
<th>Coping with stress: diabetes program, diabetes education, and self-management techniques provided by cooperadores and providers at the clinic alleviated participants’ stress by reducing their uncertainty about diabetes. (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“Through them, many people have been able to, as they say, [have] a little joy in their life because they have totally controlled [their] diabetes... it is like a blessing from God having them here.”&lt;sup&gt;(p.861)&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

U, unequivocal; C, credible.

Morrissey-Ross M. Living with diabetes: Experiences from Jamaican diabetes clinics in Kingston and Morant Bay. Diss Abstr Int Sect B Sci Eng. 2017;78(3-B(E)).<sup>34</sup>
<table>
<thead>
<tr>
<th>Finding</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finding 6</td>
<td>Psychosocial support (U)</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>For the majority, supports were multifaceted, ranging from encouraging phone calls from concerned sisters overseas to such things as young grandchildren assisting with the administration of insulin and a daughter-in-law who visited every day on her way to work to check the blood sugar. Gina said, “In Jamaica, if you have family somewhere, you’re rich, you know.” <em>(p.76)</em></td>
</tr>
<tr>
<td>Finding 7</td>
<td>Physiological impact (U)</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“Ah, diabetes... Whatever I could do first, I cannot do it again...It burdens my body. It’s against the body. Walking — I cannot walk straight...The most difficult part is over the body... poor circulation too... It look like it caused that too...me fall down, as me step, me fall down...Yes, the nerves gone right out... It burn me under the heel and stick me... It can come anywhere... afffecting my foot bottom and my heel. It burning me, burning me, burning like pepper...and the eyes, man, I don’t know if it’s a glaucoma get in the eye and eat out the eye...I can’t tell you how long I am suffering, suffering...” <em>(p.77)</em></td>
</tr>
<tr>
<td>Finding 8</td>
<td>Relationship with God (U)</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“Mary, I know that it’s God keeping me. Because there is nothing I don’t talk to Him about. I talk to ...and tell him Lord, I leave everything to you. So sometimes I feel like is Him keeping me. It’s not really like the medication, I think He’s holding me.” <em>(p.78-9)</em></td>
</tr>
<tr>
<td>Finding 9</td>
<td>Partnership with God (U)</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“You pray a lot about your condition. A way to get comfort.” <em>(p.79)</em></td>
</tr>
<tr>
<td>Finding 10</td>
<td>Optimism from faith in God (U)</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“He’s keeping me. Me just believe that the diabetes, what I have, the Lord can cut it down. I can get healing for it.” <em>(p.80)</em></td>
</tr>
<tr>
<td>Finding 11</td>
<td>Economic Impact (U)</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“You cannot keep a strict diet without money because that come with money. So I have to find the money to buy it, and sometimes the drugs are expensive — as for the insulin. So if drug store don’t have insulin, you have to buy the insulin because I have to keep on the medication. You’re looking at three thousand or to three five (about $24-$28 U.S.) for one vial of insulin.” <em>(p.81)</em></td>
</tr>
<tr>
<td>Finding 12</td>
<td>Beliefs about what would help. (U)</td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“…the medications are very expensive. No matter how small it is, whatever, I have to make sure I put that money aside to fill my prescription. I don’t put nothing before it.” <em>(p.84)</em></td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“…what I learn about cerasee tea is that diabetic cannot feel any. It will hide the blood sugar... you will do the test, and it show normal with it creeping up.” <em>(p.84-5)</em></td>
</tr>
<tr>
<td><strong>Illustration</strong></td>
<td>“…I tell myself, you see if the bushes worked nobody would have diabetes. So if you find yourself with medical problem, go to medical care. I don’t believe in staying home and doing it yourself.” <em>(p.85)</em></td>
</tr>
</tbody>
</table>
### Finding 13  Motivation to seek care (U)

**Illustration**

```
“And feeling healthy, that is the best. My mother, when she was alive, she used to take care of us, and she take care of herself until she leave us. So that’s why I said I would take good care of myself just like my mom, and also she take care of her mother.”
```

\(\text{r}^\text{p.86}\)

### Finding 14  Action taken to mitigate the effects of T2DM (U)

**Illustration**

```
“My doctor told me what to eat, so I just stick by that. It’s not hard as I cut down on portion size. Good eating habit, I can tell you. And why I know as I talk about the medication, I was following people and see, you can’t get up every day just taking tablet, taking tablet.”
```

\(\text{r}^\text{p.88}\)

### Finding 15  Differences between genders relative to T2DM (U)

**Illustration**

```
“them don’t go for check-ups because them afraid from the doctor.”
```

\(\text{r}^\text{p.91}\)

---

U, unequivocal; C, credible; T2DM, type 2 diabetes mellitus.

---


**Finding 1  An irregular pattern of usage emerged as plant and prescribed medications were used concurrently and interchangeably (U)**

**Illustration**

```
“The Doctor medicine is useful ... I take it today, tomorrow I take the bush.”
```

\(\text{r}^\text{p.1494}\)

**Finding 2  A contrast in beliefs regarding the efficacy of prescribed medicine for diabetes and the nature of the relationship with medical personnel (C)**

**Illustration**

```
“Doctor say is better for me not to take any tablets. Ah say, “Yes Doctor! Give me the tablets.” ... You must have yuh tablets to show that you coming to Doctor.”
```

\(\text{r}^\text{p.1494}\)

**Finding 3  Traditional foods as medicine (alternative medicine) (U)**

**Illustration**

```
“... If you buy ah egg and you bust it a little and you throw it out in the pan, you know and you beat it with some of the milk and drink it ... that is a medicine!”
```

\(\text{r}^\text{p.1494}\)

**Finding 4  The importance of bitterness in diabetes treatment also emerged from the findings and this was perceived as being good (U)**

**Illustration**

```
“I could tell you when my sugar raise then. It does pain me head plenty and when ah see me head start to pain me ah does say “well is the sugar raise” and when ah go and get ah cucumber and ah use that cucumber dey! Betime evening ah feel much better. The ache the headache gone then. That feel like the sugar gone down.”
```

\(\text{r}^\text{p.1494}\)

**Finding 5  God was seen to be the source of information on diabetes treatment (U)**

**Illustration**

```
“If you say you prayers and you go to yuh bedside and you pray you does get yuh own little thing. Sometimes one leaf of bush they will tell you to boil and you know! You feel much better.”
```

\(\text{r}^\text{p.1494}\)

**Finding 6  A lack of belief in the efficacy of prescribable medicines (C)**

**Illustration**

Participan C did state that prescribed medicines put her blood glucose up, which she rectified by taking both cucumber and carila.  

\(\text{r}^\text{p.1495}\)
<table>
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<tr>
<th>Finding 7</th>
<th>Use of and belief in non-prescribable medicines (U)</th>
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<tbody>
<tr>
<td>Illustration</td>
<td>Herbal medicines were categorized according to their perceived efficacy. Corila was described as ‘the strongest one of all’, Shaddom Vinni as a ‘very good thing for the sugar’ and Elder Bush as ‘good’ and ‘very good’(^{(p.1494)})</td>
</tr>
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</table>

<table>
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<tr>
<th>Finding 8</th>
<th>Control of diabetes was ascribed to a balanced intake of starchy and bitter foods and different food types were utilized to give this balance (U)</th>
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<tr>
<td>Illustration</td>
<td>“... If I feel drowsy, sick and I take some food and throw it in me mouth, it carry the feelings down. But if you sugar some tea and drink it, throw you down clean, you see.”(^{(p.1495)})</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Finding 9</th>
<th>Participants felt that their folk medicine had got the better of conventional medicine (C)</th>
</tr>
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<tbody>
<tr>
<td>Illustration</td>
<td>This became evident in the face of their amusement that ‘doctor nah know yet’ when he was pleased with the improvement in their blood glucose levels that they attributed to their herbal medicines.(^{(p.1495)})</td>
</tr>
</tbody>
</table>

U, unequivocal; C, credible.

---


<table>
<thead>
<tr>
<th>Finding 1</th>
<th>Cultural nuances shaped perspectives on self-management: use of herbal, complementary, and alternative remedies (U)</th>
</tr>
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<td>Illustration</td>
<td>“(My neighbor) is a diabetic too... Sometimes she buys bush and give me some. I don’t know the name of it but it is supposed to help with sugar. So I use that.”(^{(p.7)})</td>
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<table>
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<tr>
<th>Finding 2</th>
<th>Cultural nuances shaped perspectives on self-management: importance of maintaining local diet. (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“I take liberty every day. Right now I have ... 3 plantains, 5 or 6 tanya, sweet potatoes, and I plan to take pig tail and cornmeal dumplings and make a big pot of peas soup... You know the attitude I take. I live 70 years eating the same thing. What, now it’s going to kill me?”(^{(p.7)})</td>
</tr>
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</table>

<table>
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<tr>
<th>Finding 3</th>
<th>Culturally specific challenges were barriers to effective self-management: stigma (U)</th>
</tr>
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<tr>
<td>Illustration</td>
<td>“I think this needs to be more out in the open. Because you can have diabetes and control it and do everything that everybody else does. But it’s so secretive ... everyone will treat you like you’re dying. There’s a stigma attached, yes. To being diabetic or having to take medicine for it.”(^{(p.7)})</td>
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<tr>
<th>Finding 4</th>
<th>Culturally specific challenges were barriers to effective self-management: limited access to healthy food options/exercise (U)</th>
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<tr>
<td>Illustration</td>
<td>“Making the good food choices is hard. They’re simply not available in stores. Well, sometimes. Now, they tell me blueberries is good. I can eat that. But when you find that, it’s five dollars for a little bag so...”(^{(p.7)})</td>
</tr>
<tr>
<td>Finding 5</td>
<td>Medical homes were rarely viewed as a primary source of diabetes education or support: lack of educational resources (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“I think there should be better resources for diabetics. Once you’re diagnosed there should be a place that you can go to for regular classes and monitoring. I can’t believe we don’t have that in this day and age. There isn’t even a dietician there (doctor’s office).” <em>(p.7)</em></td>
</tr>
<tr>
<td>Finding 6</td>
<td>Medical homes were rarely viewed as a primary source of diabetes education or support: self-adjustment of medication dosing and regimen influenced by friends and family (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“Well, the doctor told me to take the insulin two times but my mother tell me I want to know if this is right. He tell me to take twenty five units in the morning and twenty five in the night. But she said it’s too much, and just gives me fifteen at night. So that’s what I do.” <em>(p.7)</em></td>
</tr>
<tr>
<td>Finding 7</td>
<td>Fear of disease complications largely motivated or stalled self-management practices: denial/minimization (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“I don’t want to think about it (having diabetes). Like I say, I don’t say I’m a diabetic. I only say my sugar is a little elevated. I don’t even want to call the word.” <em>(p.7)</em></td>
</tr>
<tr>
<td>Finding 8</td>
<td>Fear of disease complications largely motivated or stalled self-management practices: resilience (U)</td>
</tr>
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</table>
| Illustration | “I see the struggle when people lose limbs. I play the flute and don’t want to lose fingers so I changed everything … I stopped the alcohol. And I cut back on all the starchy, Caribbean foods. You have to make up your mind that you’re going to back out of all those foods you grew up with. I grow my own vegetables now. And that is another way I can get exercise.” *(p.7)*

U, unequivocal.


<p>| Finding 1 | Why people don’t think about diabetes: almost all participants considered diabetes a manageable lifelong condition, such that in achieving diabetic control, they did not have to exhaust mental energy to think about diabetes every day. (U) |
| Illustration | “I think that with diabetes, you can die from something else that isn’t diabetes. If you take your medicine and the necessary care, you aren’t necessarily going to die from diabetes.” <em>(p.5)</em> |
| Finding 2 | How to not think about diabetes: reflecting the integration of not thinking about it as part of diabetes management (U) |
| Illustration | “I would say to learn how to manage what you eat. Learn how to manage the situation of sugar [diabetes]. And don’t think about it. Always have your mind busy with work, and exercise. Diabetics shouldn’t just sit.” <em>(p.6)</em> |</p>
<table>
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<tr>
<th>Finding 3</th>
<th>How to not think about diabetes: staying physically and socially active to keep your mind busy entailed doing household chores, working (paid employment), volunteering, or visiting friends and family (U)</th>
</tr>
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<tbody>
<tr>
<td>Illustration</td>
<td>“If you are working, your mind will be busy and you won’t remember that you’re sick. You’ll live your normal life.”[p.6]</td>
</tr>
<tr>
<td>Finding 4</td>
<td>How to not think about diabetes: the central role of faith in most rural Dominican communities, religion and religious-related practices, such as attending church events and reading religious text, kept participants socially engaged and helped them not think about diabetes (C)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“I always live with a clear mind because I like to read the word of God.”[p.6]</td>
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<tr>
<td>Finding 5</td>
<td>Outcomes of <em>no le doy mente</em>: maintaining a sense of normalcy and protecting their health (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“... living your normal life. Taking your medication, managing your diet... doing the things that the doctor tells you to do. Sure, all of that. But not thinking, “Oh I am diabetic, I am diabetic,” because if I sit here thinking that I am diabetic all day, I will be stuck here.”[p.7]</td>
</tr>
<tr>
<td>Finding 6</td>
<td>Outcomes of <em>no le doy mente</em>: the influence of seeing others living normal lives is notable here, as it reflects the social influence processes of observing others as they successfully manage diabetes and live a normal life. (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“I know there are people who live many years with diabetes, and they have a normal life. But it’s because they take care of themselves. That has motivated me to take care of myself.”[p.8]</td>
</tr>
</tbody>
</table>

U, unequivocal; C, credible.


Finding 1 The path of direct support for diagnosis from friends and neighbors (U)

Illustration
“...She told me, ‘you’re sick, your clothes are loose and falling off of you.’ I agreed. I had a t-shirt that I no longer fit in. Dry, I was getting drier, [...to the point that] a man told others ‘be fearful of that man, he could have AIDS.’ And I heard that, you see? I went to my partner and told her that I felt ill. After that a neighbor took me to the see a good doctor to see about my condition where the doctor then tells me, ‘sir, you are a diabetic.’”[p.6]

Finding 2 Informational and instrumental support from friends and neighbors to get to the clinic (U)

Illustration
“How did I first get here? The man sitting in the waiting room brought me. He found out about this program and invited a group of us to go with him. Every month a few of us go in his bus for our appointments.”[p.6]
<table>
<thead>
<tr>
<th>Finding</th>
<th>Description</th>
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<tbody>
<tr>
<td>Finding 3</td>
<td>Cooperadores played a key role in disseminating diabetes-related information and increasing awareness of the diabetes program in their communities. (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“I started here because I used to get checked out in a distant part of the province. Then, I went to a public clinic and heard about a diabetes centre from the staff. That is how I learned about the programme and that’s how I came here.” (p.7)</td>
</tr>
<tr>
<td>Finding 4</td>
<td>Cohabiting partners were often the primary supporters mentioned by participants when asked “who supports you with your diabetes?” (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“Yes, my wife supports me with my treatment. She’ll gives me what I can or should eat [for my diet]. If I can’t eat something she does not prepare it.” (p.7)</td>
</tr>
<tr>
<td>Finding 5</td>
<td>Women had the primary responsibilities of the home, such as domestic work and preparing family meals, even when those meals were not part of their recommended diet. Maintaining the same level of responsibilities they had before having diabetes coupled with reporting little support in the home led to narratives depicting stress and frustration. Rosa, a 52-year-old female living with diabetes for three years, described having limited support at home and how it affected her physically. (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“No one supports me, no one. How do I say this, even if I feel bad no one pays attention. Not even my sisters come to visit and lend me a hand. But God gives me strength, because no one else helps me. What happens is that when my sugar levels go up, I cannot sleep well and sometimes I get scared. Sometimes my family does things I don’t like, which makes me feel ill, like I have high blood pressure. I don’t know. Listen, those who have diabetes have to be careful and so they need someone who will support them so that they feel better.” (p.7-8)</td>
</tr>
<tr>
<td>Finding 6</td>
<td>The role of support from cooperadores, who are tasked with not only supporting diabetes care and medication, but also delivering health talks on the importance of diabetes self-management strategies to all participants and the community at large. These health talks were often referenced in the interviews as a form of informational support to learn how best to manage their condition. Cooperadores also provided emotional support by showing that they cared about their participants through actively listening to their successes and challenges. (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“Before I came here I felt that everything was crashing around me. Some of us feel like we’re drowning in a cup of water because we do not find someone to talk to about our problems. But now I can talk to the cooperadores . . . to the doctor, and I feel better.” (p.8)</td>
</tr>
<tr>
<td>Finding 7</td>
<td>Physicians served as sounding boards for issues related to their diabetes and their day-to-day stressors. (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“For men, we can suffer from a problem with (sexual) relations. I spoke with the doctor when I had a problem [erectile dysfunction]. He told me what I need to do to control my sugar otherwise I won’t get better.” (p.8)</td>
</tr>
</tbody>
</table>
Finding 8 | Support from friends and neighbors was less salient in the long-term management stage than the support from partners and providers (C)

Illustration | The long-term management stage was characterized by instrumental and emotional support from family, especially partners. Healthcare providers and cooperadores provided informational and instrumental support to help participants manage their diabetes. Friends and neighbors were less salient in this stage compared to the diagnosis and programme enrolment stages. Although participants reported a greater variety of social support sources in this stage, participants also described the negative effects of limited or no support to manage their diabetes.\(^{(p.9)}\)

Finding 9 | Having a friend who ensured that he adhered to his diet was appreciated and helped him adhere to his self-management regimen. (U)

Illustration | Miguel: I have a good friend that when we go out to eat, he argues with me about what I can eat. He tells me, ‘no you can’t eat this and that, because it’s harmful.’ Interviewer: And when he says that, how does that make you feel? Miguel: Good, because he’s looking out for me.\(^{(p.9)}\)

\(\text{U, unequivocal; C, credible.}\)


Finding 1 | To keep healthy (NS)
Finding 2 | Perceived risk of complications (NS)
Finding 3 | Fear of death, discomfort (NS)
Finding 4 | Desire to live (NS)
Finding 5 | Follow doctors’ orders (NS)
Finding 6 | Feeling compelled (NS)
Finding 7 | Support from family and friends (NS)
Finding 8 | Experience of complications (NS)
Finding 9 | Lack of self-monitoring of blood glucose (NS)
Finding 10 | Lack of perceived risk of complications (NS)
Finding 11 | Overweight or obese state (NS)
Finding 12 | Inadequate knowledge (NS)
Finding 13 | Little motivation to maintain health (NS)
Finding 14 | Non-compliance with medication (NS)
Finding 15 | Little effort to control diet (NS)
Finding 16 | Use of “bush teas” (NS)
Finding 17 | Belief that diabetes can be cures (NS)

\(\text{NS, not supported.}\)