



# BMJ Open Patient perspectives on integrated healthcare for HIV, hypertension and type 2 diabetes: a scoping review

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## ABSTRACT

**Introduction** Antiretroviral therapy has reduced mortality and led to longer life expectancy in people living with HIV. These patients are now at an increased risk of non-communicable diseases (NCDs). Integration of care for HIV and NCDs has become a focus of research and policy. In this article, we aim to review patient perspectives on integration of healthcare for HIV, type 2 diabetes and hypertension.

**Methods** The framework for scoping reviews developed by Arksey and O'Malley and updated by Peter *et al* was applied for this review. The databases PubMed, Web of Science and Cochrane library were searched. Broad search terms for HIV, NCDs (specifically type 2 diabetes and hypertension) and healthcare integration were used. As the review aimed to identify definitions of patient perspectives, they were not included as an independent term in the search strategy. References of included publications were searched for relevant articles. Titles and abstracts for these papers were screened by two independent reviewers. The full texts for all the publications appearing to meet the inclusion criteria were then read to make the final literature selection.

**Results** Of 5502 studies initially identified, 13 articles were included in this review, of which 11 had a geographical origin in sub-Saharan Africa. Nine articles were primarily focused on HIV/diabetes healthcare integration while four articles were focused on HIV/hypertension integration. Patient's experiences with integrated care were reduced HIV-related stigma, reduced travel and treatment costs and a more holistic person-centred care. Prominent concerns were long waiting times at clinics and a lack of continuity of care in some clinics due to a lack of healthcare workers. Non-integrated care was perceived as time-consuming and more expensive.

**Conclusion** Patient perspectives and experiences on integrated care for HIV, diabetes and hypertension were mostly positive. Integrated services can save resources and allow for a more personalised approach to healthcare. There is a paucity of evidence and further longitudinal and interventional evidence from a more diverse range of healthcare systems are needed.

## INTRODUCTION

Worldwide, 37.7 million people are living with HIV, of which 24.5 million are on treatment. There were 680 000 AIDS-related deaths and

## Strengths and limitations of this study

- We conducted a systematic review of patient perspectives on integrating healthcare for HIV and non-communicable diseases using the framework for scoping reviews developed by Arksey and O'Malley and updated by Peter *et al*.
- The scoping review methodology and broad search terms, reflected in more than 5500 initial records identified, ensure a high sensitivity of our search strategy covering all settings and levels of healthcare systems.
- As the review aimed to identify all relevant definitions of patient perspectives, they were not included as an independent term in the search strategy, allowing us to scope the variety of concepts and definitions used in the literature.
- A limitation of the current scoping review is the singular focus on type 2 diabetes and hypertension as indicator conditions, while other important diseases for integration not covered would be mental health, cardiovascular disease or chronic kidney disease.

1.7 million new infections in 2020.<sup>1</sup> Global health programmes and related funding streams such as those supported by American President's Emergency Plan for AIDS Relief or the Global Fund have since 2003 facilitated the development of separate, vertical HIV-focused healthcare infrastructure across sub-Saharan Africa (SSA).<sup>2</sup> This has led to an increased coverage with antiretroviral therapy (ART) and in consequence to longer life expectancy in people living with HIV (PLWH). However, at the same time, this has contributed to fragmentation in health systems in countries in Africa.<sup>3</sup> Over the last decade, an increase in the burden of non-communicable diseases (NCDs) has been seen among PLWH, to a large degree due to better survival and general health status.<sup>4,5</sup> In parallel, the prevalence of NCDs in the general population, in particular type 2 diabetes (T2D) and hypertension (HT) has increased significantly across SSA.<sup>6</sup> It is



estimated that 40.5 million (71%) of the 56.9 million worldwide deaths were from NCDs in 2016 and the highest risks of dying from NCDs were observed in low-income and middle-income countries, especially in SSA.<sup>7</sup> Therefore, healthcare systems strengthening, increased investments and efficient use of resources are needed to counter the double burden of communicable and NCDs in SSA.<sup>8</sup> The established vertical healthcare structures in many countries, in particular those for HIV-care, risk contributing to inefficient use of resources and increased HIV-related stigma.<sup>9 10</sup>

Thus, integration of the existing communicable and non-communicable healthcare infrastructure has become a recent policy and research focus to improve care for people living with NCDs (PLWNCDs) and PLWH alike.<sup>11</sup> Integrated care can be defined as ‘the coordination, colocation or simultaneous delivery of communicable and non-communicable services to patients who need it, when they need it.’<sup>5</sup> Integration of HIV and NCDs services can be categorised as (1) community-based integrated HIV/NCDs screening in the general population, (2) screening for NCDs and their risk factors among PLWH, (3) integrated care of HIV/NCDs in healthcare facilities, (4) differentiated care for stable HIV/NCDs and (5) integrated population health for all patients with any need.<sup>12</sup> Taking T2D and HT as an example, potential benefits could be better control of HT and T2D, earlier diagnosis, better management and disease control, and cost saving for patients through inclusion in routine HIV control. Accordingly, benefits for HIV-control could be easier access to HIV services and the reduction of stigma.<sup>13</sup> A potential downside to integration can be longer waiting times for patients if integration is done with reduced resources compared with the current standard care.<sup>14</sup>

Patients’ knowledge, attitudes, beliefs, desires and practices have a large influence on the successful delivery of healthcare.<sup>15</sup> Recently, quality of life has been proposed as the fourth 90 to complement the Joint United Nations Programme on HIV/AIDS (UNAIDS) 90-90-90 targets to monitor the global HIV response, which requires a better understanding of patient reported outcomes.<sup>16</sup> However, little is known about patient perspectives on integration of healthcare for HIV and NCDs.<sup>13</sup>

### Objective and aims

The objective of this scoping review was to identify, describe and analyse the peer-reviewed literature on patient perspectives on healthcare integration for HIV and NCDs. T2D and HT were used as indicator conditions for NCDs as they represent a large proportion of the NCD burden, in particular in PLWH, are well-defined and most commonly used as indicator conditions in published research on HIV/NCD integration.

Specifically, we aimed to identify the scope and describe the peer-reviewed literature on patient perspectives. Furthermore, we reviewed frameworks and methodologies used to assess patient perspectives on HIV/NCD healthcare integration as well as the findings and

potential recommendations of the available literature on integration of HIV and NCD services.

### Research questions

1. Which kind of research (quantitative, qualitative) exists and what methodologies were used?

Rationale: To date, no systematic review of patient perspectives on integrated healthcare exists. Describing the evidence, kind of research and methodologies in a systematic way helps identifying research gaps and plan for future research.

2. In what settings (geographical, healthcare system, socioeconomic context) has research been conducted?

Rationale: We report findings by geographical setting, healthcare system context and socioeconomic group, as approaches to healthcare integration can differ widely depending on the situation.

3. How are patient perspectives conceptualised?

Rationale: To the best of our knowledge, no standard or best-practice conceptualisation for assessing patient perspectives on healthcare provision exists. Identifying the concepts used can help standardise and compare patient perspectives across studies and settings.

4. What are patient perspectives on integration of HIV/NCD services?

- What are the perspectives of PLWNCDs on integration of T2D and/or HT care with HIV care?
- What are the perspectives of PLWH on integration of HIV care with T2D and/or HT care?

Rationale: Describing patient perspectives on integration of HIV/NCD services can inform policy-makers, researchers and healthcare providers to design effective, patient-centred, healthcare interventions.

### METHODS

A scoping review is a method of reviewing evidence-based research to, scope a body of literature, clarify concepts, identify knowledge gaps or to investigate research conduct.<sup>17</sup> The framework for scoping reviews developed by Arksey and O’Malley and updated by Peters *et al* was applied for this study.<sup>18 19</sup> This method of a scoping review was chosen over a more focused systematic review to apply a broader approach to the vaguely defined theme in order to map the available literature on this topic, and to identify research gaps.<sup>18</sup> In the preparation of this review a research protocol was created according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist to ensure quality, transparency and complete reporting.<sup>20</sup>

### Patients and public involvement

Patients and the public were indirectly represented in the design, conduct and reporting of this review as several of the authors are representatives of patient associations (Danish NCD Alliance, East Africa NCD Alliance). The development of the research question(s) and outcome measures was driven by the experience of the authors

**Table 1** Definitions

Category	Definitions
PLWH/PLWA	PLWH/PLWA are defined according to the definition by the UNAIDS Terminology Guidelines from 2015 as persons, who are seropositive for HIV. <sup>36</sup>
NCDs	NCDs are characterised by WHO as being non-transmissible and often known as chronic diseases. They are a result of combinations of genetic, physiological, environmental and behavioural factors. They are largely preventable and are linked to common risk factors and underlying determinants. <sup>37</sup> In this review, we chose to focus on type 2 diabetes mellitus and hypertension as indicator conditions, which have seen a rapid increase in prevalence, especially in SSA. <sup>6</sup>
Integrated healthcare	For integrated healthcare we used the definition of the WHO Europe Regional Office: ‘an approach to strengthen people-centred health systems(...)delivered by a coordinated multidisciplinary team of providers working across settings and levels of care(...)’. <sup>34</sup>
Patient perspectives (PP)	There is no unique consensus or definition for PP. <sup>15</sup> For the purpose of this review we defined PP as the experiences, values, preferences, expectations, concerns and opinions expressed by patients (in our case PLWNCDs or PLWH). They can broadly be categorised as those perspectives expressed by individually concerned patients and those expressed by informally or formally selected patient representatives (eg, civil society organisations). They can be reported directly by patients or indirectly through healthcare providers or other secondary sources.

NCDs, non-communicable diseases; PLWA, people living with AIDS; PLWH, people living with HIV; PLWNCDs, people living with NCDs; SSA, sub-Saharan Africa.

as representatives of patient associations. However, no patients were involved directly in the planning and conduct of this study. The results will be disseminated to patient representatives and associations (eg, the Global NCD Alliance and East Africa NCD Alliance).

### Definitions

The definitions of PLWH/PLWA (people living with AIDS), NCDs, integrated healthcare and patient perspectives are provided in [table 1](#). As the review aimed to identify definitions of patient perspectives, they were not included as an independent term in the search strategy.

### Databases and search strategy

The databases PubMed, Web of Science and Cochrane library were searched. Broad terms were included in the search strategy ([table 1](#)). HIV, NCDs (specifically T2D and HT) and healthcare integration were the three main categories the search strategy was based on. The search strategy for PubMed and Cochrane library consisted of free text and Medical Subject Headings terms. The search strategy used in PubMed is presented in [table 2](#), and the search terms used in the other databases are presented in online supplemental tables 1 and 2. A librarian at the University of Aarhus was consulted to support the development of the search terms. Reference lists of included publications were searched for relevant articles.

### Criteria for inclusion and exclusion

#### Inclusion criteria

- ▶ Peer-reviewed articles (including original quantitative and qualitative studies, systematic reviews, editorials, commentaries, viewpoints) on integration of healthcare for HIV and T2D and/or HT which provide information on patient perspectives (according to definitions in [table 1](#)).

- ▶ Published between 1 January 1990 and 1 March 2021.
- ▶ Publications in English, German, French and Danish.

#### Exclusion criteria

- ▶ Book chapters and grey literature (dissertations, conference proceedings, reports, etc).

### Literature selection

The citation software Zotero was used to merge and remove the duplicates among the results. Titles and abstracts for these papers were thoroughly screened using Rayyan (a web and mobile app for systematic reviews) by two independent reviewers (SS and CK). The full texts for all the publications appearing to meet the inclusion criteria were read to make the final literature selection. Any disagreements between the two reviewers at any stage of the study selection were resolved by a third reviewer (PK).

### Data collection and extraction

Data on origin of author, year of publication, geographical focus of the publication, publication type, type of NCD, definition of healthcare integration, definition of patient perspectives, assessment method for patient perspectives and the content of the patient perspectives were extracted and transferred into a prespecified extraction sheet (SS). These data were used to facilitate analysis and development of figures and summarising tables. A second researcher independently checked the data for accuracy and detail (CK). Disagreements were resolved by consensus.

### Data analysis

The extracted information were analysed according to the research questions stated above and summarised systematically. Additional important themes reported

**Table 2** Search terms used in PubMed

Category	PubMed search strategy
HIV	1. HIV infections 2. Human immunodeficiency virus 3. AIDS 4. 1 OR 2 OR 3
NCDs, diabetes mellitus type 2 and hypertension	5. Noncommunicable diseases 6. NCDs 7. NCD 8. Diabetes Mellitus Type 2 9. ((type 2 OR type ii OR “noninsulin dependent” OR “non insulin dependent” OR “adult onset” OR “maturity onset” OR obes*) AND diabet*) 10. T2dm 11. Tiidm 12. Hypertension 13. Hypertensi* 14. Prehypertension 15. Pre hypertension 16. prehypertensi* 17. Blood pressure 18. bp 19. 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR 17 OR 18
Healthcare integration	20. Integrated delivery systems 21. (vertical OR horizontal OR integrat* OR integrated OR coordinat* OR coordinated OR co-ordinat* OR co-ordinated OR link* OR linked) AND (program* OR care OR service*) OR delivery of health care OR primary health care OR integrat* OR health care OR health-care OR healthcare OR health service 22. 20 OR 21 4 AND 19 AND 22

NCDs, non-communicable diseases.

by the included studies not covered by the predefined research questions were described in a narrative way.

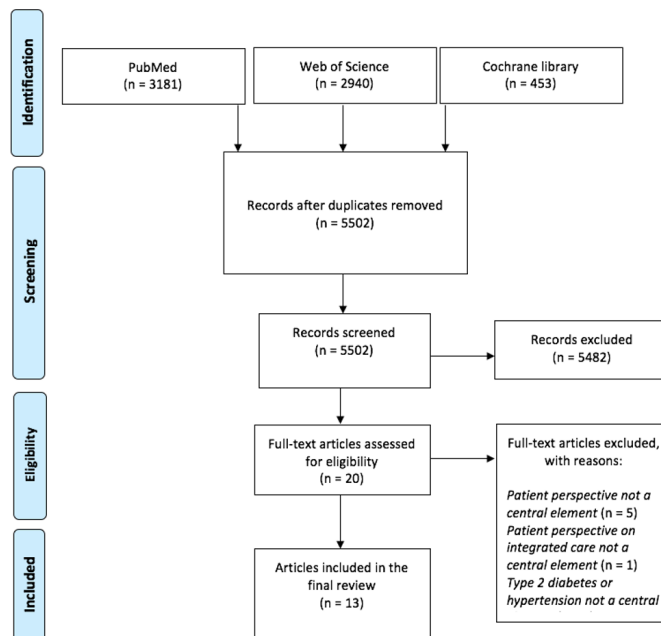
## RESULTS

### Search results

After removal of duplicates, 5502 articles were identified. 5486 publications did not match the inclusion criteria and were excluded after review of titles and abstracts by two independent reviewers. Full texts were retrieved for 20 articles. Of these, 13 were eligible<sup>10 14 21–31</sup> for inclusion, 7 were excluded during the assessment of full texts (figure 1).

### Characteristics of included studies

All included publications were original research articles, used cross-sectional study designs, and were published between 2016 and 2021. All were qualitative studies, and all except two<sup>14 29</sup> used semistructured interviews,<sup>27</sup> in-depth interviews<sup>10 22 24 30 31</sup> or a combination of



**Figure 1** PRISMA flow chart of the flow of studies through each phase of the review process. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

these<sup>21 26 28</sup> (table 3). Some studies combined the interviews with instruments such as focus group discussions and patient observations. A majority of the studies (n=7) had their origin/geographical focus in South Africa (SA). One study was conducted in Kenya,<sup>22</sup> Tanzania,<sup>31</sup> Uganda,<sup>30</sup> Malawi,<sup>29</sup> Northern Thailand<sup>27</sup> and North Carolina (USA), respectively<sup>28</sup> (table 3).

### Study settings, healthcare systems and socioeconomic contexts

An overview of the study settings, healthcare systems and socioeconomic contexts is provided in table 4. The articles described diverse healthcare systems regarding the integration of HIV, HT and T2D healthcare services ranging from no integration to the integration of some elements, such as integrated medication refill systems for HIV, diabetes mellitus (DM) and HT patients.<sup>22 26</sup> The presented concepts of healthcare integration were likewise diverse. Many studies from SA<sup>21 23–26</sup> used the Integrated Chronic Disease Management (ICDM)<sup>32</sup> framework, which was introduced in SA between 2011 and 2013. The ICDM model was introduced as a response to the double burden of HIV and NCDs with a vision of providing integrated prevention, treatment and care of chronic patients at Primary Health Care (PHC) level to ensure a seamless transition to assisted self-management within the community by leveraging HIV programmes.<sup>25 32</sup> The model consists of four interrelated components; facility reorganisation (administrative and patient flow), clinical supportive management (clinical mentorship), assisted self-support (adherence support) and strengthening of support systems outside the facility.<sup>23 32</sup>

Some places in SA<sup>21 24</sup> and Thailand<sup>27</sup> reported separate healthcare clinics for HIV and T2D. In Free State



**Table 3** Overview of geographical origin, research type and methodology of included studies

	Patient population	Geographical focus	Research type	Assessment method for patient perspectives
Matima <i>et al</i> <sup>21</sup>	PLWH	Khayelitsha, Cape Town, SA	Qualitative	Individually face-to-face semistructured, in-depth interviews (IDIs) in English. The IDIs were conducted in a private room in the clinic with the presence of a translator.
Rawat <i>et al</i> <sup>14</sup>	PLWH and PLWNCDs	Free State, SA	Qualitative	Cross-sectional survey (using likert scales) administration (in the participants' language of preference), conducted in two waves on different patients. Participants were surveyed in semiprivate locations (where space permitted) or in the waiting areas.
Venables <i>et al</i> <sup>22</sup>	PLWH and PLWNCDs	Kibera, Kenya	Qualitative	IDIs or FGDs in English or Swahili. All IDIs or FGDs took place in clinical consultation rooms or dedicated MAC areas within the clinic.
Lebina <i>et al</i> <sup>23</sup>	PLWH and PLWNCDs	Dr. Kenneth Kaunda district and West Rand district, SA	Qualitative	Structured interviews (including standardised open-ended and closed fixed-response questions) of healthcare workers' (nurses, administrators and ancillary staff) perceptions of patient responsiveness. Participants were asked to identify facility specific issues (context) that might hinder or support implementation fidelity of the ICDM model.
Bosire <sup>24</sup>	PLWH	Soweto, SA	Qualitative	IDIs (with both closed and open-ended questions) conducted in the clinic in English and observations of the patients in their homes. The aim of the home visits was to understand patients' lived experiences with chronic conditions and illness management.
Ameah <i>et al</i> <sup>25</sup>	PLWH and PLWNCDs	Agincourt, SA	Qualitative	Exit interviews followed by FGDs of 5–9 patients of similar age (to provide a conducive environment to freely discuss) (each session 1–1.5 hours) and one separate FGD for five clinical defaulters. The FGDs were held in a neutral venue within the catchment area of the health facility to enable the patients to freely express their experiences.

Continued

Table 3 Continued

	Patient population	Geographical focus	Research type	Assessment method for patient perspectives
Knight <i>et al</i> <sup>26</sup>	PLWH	Langa and Khayelitsha, Cape Town, SA	Qualitative	Semistructured, IDIs with patients and key informant interviews (KII) with service providers to triangulate data from patients. The interviews of the patients mostly took place in their homes. The KII and few of the patient interviews took place in a quiet space within the facility or relevant place of work where people felt comfortable and privacy could be ensured.
Moise <i>et al</i> <sup>27</sup>	PLWH	Chiang Mai, Northern Thailand	Qualitative	Semistructured interviews in Thai
Mkumba <i>et al</i> <sup>28</sup>	PLWH	Durham, North Carolina, US	Qualitative	Semistructured IDIs in private rooms in the clinic
Moucheraud <i>et al</i> <sup>29</sup>	PLWH	Lilongwe, Malawi	Quantitative	Cross-sectional survey (were multiple-choice or short-response) and data from clinical records
Peer <i>et al</i> <sup>10</sup>	PLWH	Cape Town and surrounding municipalities, SA	Quantitative and qualitative	Quantitative surveys (Likert-scale), FGDs and IDIs
Muddu <i>et al</i> <sup>30</sup>	PLWH	Tororo, Nagongera Health Centre IV, Mulanda Health Centre IV) and the District Health Office of Tororo District, Eastern Uganda	Qualitative	KIIs, IDIs and FGDs
Manavalan <i>et al</i> <sup>31</sup>	PLWH	Moshi urban district, Northern Tanzania	Qualitative	IDI. The interview guide included open ended questions on key domains of interest, with each question followed by a list of possible probes to guide the conversation

FGDs, focus group discussions; ICDM, Integrated Chronic Disease Management; IDI, In-depth Interview; MAC, Medication Adherence Clubs; PLWH, people living with HIV; PLWNCDs, people living with NCDs; SA, South Africa

and Agincourt (SA) some of the PHC clinics provided integrated care for T2D and HIV, while other PHC clinics did not have integrated care yet, though both studies only included the PHC clinics with integrated care.<sup>14 25</sup> In a clinic in Khayelitsha, ART and chronic care services were located at the same clinic but in different sections<sup>26</sup> (table 4). A study from the Duke Adult Infectious Diseases Clinic in the USA reported that NCD-related healthcare could be provided at the HIV-clinic but almost half of the HIV clinic patients received chronic NCD care outside of the clinic.<sup>28</sup> Finally, two studies described infrastructures of more complete integration in the form of Medication Adherence Clubs (MACs)<sup>22</sup> and implementation of the

ICDM model into PHCs.<sup>23</sup> The integrated MACs were established in 2013 in Kibera as a medication refill system for those with HIV, DM and HT.<sup>22</sup>

### Sociodemographic characteristics of the patients

The number of included participants ranged from 10<sup>24</sup> to more than 800.<sup>14</sup> In all except one study, more female patients were included (table 4).<sup>26</sup> Participant's age ranged from 18 to 70 years, but none included children <18 years. All studies, except one from the USA, were conducted in low-income or middle-income countries in SSA and Thailand. The participants were characterised by a low educational level,<sup>21</sup> unemployment<sup>21 24</sup> and/

**Table 4** Study settings, healthcare systems, socioeconomic contexts and conceptualisations of patient perspectives

	Healthcare integration	Infrastructure and study setting	Sociodemographic characteristics of patients (no of patient-participants, gender, age, diseases, housing, employment rate, income)	Conceptualisation of patient perspectives
Matima <i>et al</i> <sup>21</sup>	The Innovative Care for Chronic Conditions <sup>38</sup> model adapted through the Integrated Chronic Disease Management (ICDM) <sup>32</sup> framework was used to conceptualise healthcare integration.	Separate clinics for HIV and T2D (a clinic providing care for HIV and TB, and a PHC clinic providing care for all other diseases, including T2D).	<ul style="list-style-type: none"> <li>▲ n=10</li> <li>▲ 5 females</li> <li>▲ Age: 35–65 years</li> <li>▲ Disease: HIV and T2D</li> <li>▲ Educational level: Primary: 1/10, Secondary: 8/10 and Tertiary: 1/10</li> <li>▲ Employment rate: ~50%</li> </ul>	Shippee's Cumulative Complexity Model <sup>39</sup> —workload of demands related to chronic disease management ('patient workload'), and a patient's capacity to meet this workload ('patient capacity'), which is determined by factors such as their physical or mental functioning, socioeconomic resources, social support, level of literacy and attitudes or beliefs.
Rawat <i>et al</i> <sup>14</sup>	Healthcare integration was conceptualised as integration of HIV care in PHC clinics.	Some PHC clinics had integrated care for HIV, but not all. The study was conducted 2–3 years after implementation of HIV into PHC clinics. The study included only PHC clinics where HIV was integrated.	<ul style="list-style-type: none"> <li>▲ n=812+9 (both patients+caregivers)</li> <li>▲ Age: &gt;18 years</li> <li>▲ Disease: HIV, T2D or other.</li> </ul>	How patients experienced quality of care (QoC) and satisfaction with staff after integration of HIV care into PHC clinics.
Venables <i>et al</i> <sup>22</sup>	Integration of HIV, DM and hypertensive patients in Medication Adherence Clubs (MACs).	HIV/TB services in PHC since 2003, and integrated NCD management from 2009. MACs provide a medication refill system for HIV, DM and HT patients who meet defined clinical eligibility criteria.	<ul style="list-style-type: none"> <li>▲ n=81</li> <li>▲ Gender: 51 females</li> <li>▲ Age: Median age of MAC-patients: 48 years</li> </ul> Diseases: HIV or HT or T2D	How patients experienced integrated NCD-HIV MACs, the challenges they faced and their perceptions about models of care for chronic conditions.
Lebina <i>et al</i> <sup>23</sup>	The ICDM model <sup>32</sup> was used to conceptualise healthcare integration by implementing the model at PHC facilities.	HIV and T2D integrated into PHC clinics. DKK and WR were the pilot sites for the ICDM model. <sup>32,40</sup> 16 PHC clinics were included in the study (8 in the WR and 8 in the DKK health districts).	<ul style="list-style-type: none"> <li>▲ Diseases: The staff provided care for HIV, T2D or other diseases.</li> <li>▲ Housing: Informal: DKK: 21% and WR: 19.2%</li> <li>▲ Literacy rate: DKK: 89.6% and WR: 97.6%</li> <li>▲ Employment rate: DKK: 74.6% and WR: 71.4%</li> </ul>	The healthcare workers' perceptions of patient perspectives regarding moderating factors of implementation fidelity of the ICDM model. <sup>32</sup>
Bosire <sup>24</sup>	The ICDM model <sup>32</sup> and WHO's definition: "the organisation, management and coordination of health services so that people get the care they need, when they need it, in ways that are user-friendly, achieve the desired results and provide value for money." <sup>41</sup>	A large tertiary hospital in Soweto. Comprehensive HIV care provided at PHC clinics, and comprehensive diabetes care only provided at the tertiary hospital.	<ul style="list-style-type: none"> <li>▲ n=15</li> <li>▲ Gender: 8 females</li> <li>▲ Age: 40–70 years</li> <li>▲ Diseases: T2D and HIV comorbidity</li> <li>▲ Employment rate: &lt;50%</li> </ul>	How patients experienced getting access to healthcare for comorbid HIV and T2D, and how they experienced self-management of their concurrent chronic illnesses at home.

Continued

Table 4 Continued

	Healthcare integration	Infrastructure and study setting	Sociodemographic characteristics of patients (no of patient-participants, gender, age, diseases, housing, employment rate, income)	Conceptualisation of patient perspectives
Ameh <i>et al</i> <sup>25</sup>	The ICDM model <sup>32</sup> and WHO's definition of integrated chronic care was used to conceptualise healthcare integration. <sup>41</sup>	At the time of the study, the ICDM model <sup>32</sup> was being implemented in 17 out of the 39 PHC clinics in the sub-district. 7 of the 17 facilities implementing the ICDM model <sup>32</sup> in Agincourt Health and Demographic Surveillance System.	<ul style="list-style-type: none"> <li>▲ n=61</li> <li>▲ Gender: 43 females</li> <li>▲ Age: &gt;18 years</li> <li>▲ Diseases: HIV, HT and T2D</li> </ul>	Avedis Donabedian's structure, process, and outcome theoretical framework <sup>42</sup> was used to conceptualise Patient perspectives regarding the QoC in the ICDM model <sup>32</sup> implemented in PHC facilities and regarding the patient-provider interactions in these integrated PHC facilities.
Knight <i>et al</i> <sup>26</sup>	The ICDM model <sup>32</sup> and Chronic Care Clubs <sup>43</sup> (a counterpart to MACs) were used to understand healthcare integration.	Langa: PHC provided care for HIV and the Vanguard Community Health Centre provided similar services as the Langa Clinic and additionally chronic care services (incl. T2D). Khayelitsha: provides the same services as Vanguard CHC, including care for HIV and T2D. Different staff members provide care for HIV and NCDs (incl. T2D) in different sections.	<ul style="list-style-type: none"> <li>▲ n=Khayelitsha: 14 and Langa: 9.</li> <li>▲ Gender: Khayelitsha: 5 females and Langa: 5 females.</li> <li>▲ Age: &gt;50 years</li> <li>▲ Diseases: HIV +co or multimorbidity (including T2D)</li> <li>▲ Income: A majority of the participants received old age and disability social grants (US\$120 /month)</li> </ul>	Older PLWH's experiences in accessing healthcare and treatment for comorbidities including HIV and T2D were conceptualised in the context of the syndemics model. <sup>44</sup> The syndemics model assesses the interaction of two or more concurrent diseases in a biopsychosocial context to consider reasoning for behaviour and outcomes. <sup>44</sup>
Moise <i>et al</i> <sup>27</sup>	The concept of healthcare integration were based on three common models: (1) integrating services for NCD into centres initially providing HIV care; (2) integrating care for HIV into centres initially providing NCD services; and (3) synchronised integration of both HIV and NCD care and services. <sup>11 45</sup>	Study conducted in Chiang Mai, a province of 1.6 million people with 25 hospitals (1 general, 1 university and 23 community), with 266 health centres. At the time of the study, T2D and HIV clinics were operated independently in Thailand.	<ul style="list-style-type: none"> <li>▲ n=12</li> <li>▲ Gender: 9 females and one unreported</li> <li>▲ Age: 42–56 years (mean: 49 years)</li> <li>▲ Diseases: Comorbidity of HIV and DM</li> <li>▲ Educational level: 2/12: no formal education</li> </ul>	The syndemics framework <sup>44</sup> was used to explore patients' knowledge and perceptions of health status and management of care for comorbidity of T2D and HIV.
Mkumba <i>et al</i> <sup>28</sup>	The concept of integrated healthcare was described as a consolidated care, where all HIV and non-HIV care was provided by a single provider. <sup>46</sup>	Duke Adult Infectious Diseases Clinic. This clinic provided care for approx. 1900 PLWH. In 2017, 48% of HIV clinic patients received chronic NCD care outside of the clinic.	<ul style="list-style-type: none"> <li>▲ n=20</li> <li>▲ Gender: N/A</li> <li>▲ Age: 44–67 years (mean: 52.5 years)</li> <li>▲ Diseases: HIV and NCDs (incl. T2D)</li> </ul>	The conceptualisation of patient perspectives was assessed by the HIV patient's preference for provider models for their concurrent NCDs (including T2D) and how NCD care delivery could be improved according to them.
Moucheraud <i>et al</i> <sup>29</sup>	'integrated care' if patients reported that they refilled antihypertensive medications and ART during the same clinic visit. Any antihypertensive medication refill outside of Partners in Hope, or at Partners in Hope but not at the same time as an ART visit, was classified as a non-integrated client.	Partners in Hope Medical Centre, an urban, (President's Emergency Plan for AIDS Relief)-USAID-supported HIV-treatment site in Malawi. Partners in Hope has both an outpatient clinic that operates on a fee-for-service model and an HIV clinic that provides free care.	<ul style="list-style-type: none"> <li>▲ n=199</li> <li>▲ Gender: 130 (65.3%) female</li> <li>▲ Age: Mean age 52</li> <li>▲ Diseases: HIV and HT comorbidity</li> <li>▲ Employment rate: 133 (66.8%)</li> <li>▲ Income in US\$: mean (median) 3276 (840)</li> </ul>	Assessment of behaviours related to care-seeking and prescription refills.

Continued



Table 4 Continued

	Healthcare integration	Infrastructure and study setting	Sociodemographic characteristics of patients (no of patient-participants, gender, age, diseases, housing, employment rate, income)	Conceptualisation of patient perspectives
Peer <i>et al</i> <sup>10</sup>	ICDM Model. This model incorporates a diagonal approach that integrates the vertical HIV programme with the horizontal general healthcare system.	17 public healthcare facilities in Cape Town, South Africa and the surrounding rural municipalities. All clinics treated more than 300 HIV infected patients monthly.	<ul style="list-style-type: none"> <li>▲ n=55 patients (35 in 6 focus groups and 20 in-depth individual patient interviews)</li> <li>▲ Diseases: HIV and HT comorbidity</li> </ul>	The study used the 'framework for understanding diabetes care within the context of comorbid chronic conditions' as described by Plette and Ker (2006). Two themes were investigated: (1) Experiences of comorbid HIV and HT diagnoses and (2) Experiences with the primary healthcare system.
Muddu <i>et al</i> <sup>30</sup>	HIV and NCD care were colocated. HIV-infected patients received HIV and NCD-focused care simultaneously during their visit. HIV-uninfected persons received treatment for hHT and/or diabetes.	Three high volume HIV clinics (average 3600 PLWH) in Eastern Uganda.	<ul style="list-style-type: none"> <li>▲ n=72 patients (60 in FDGs and 12 IDI)</li> <li>▲ Gender: 50% male</li> <li>▲ Age: Mean age 47±7.5</li> <li>▲ Diseases: HIV and HT comorbidity</li> </ul>	The Consolidated Framework for Implementation Research (CFIR) was used to explore barriers to and facilitators of HTN/HIV. CFIR's five major domains include intervention characteristics, outer setting, inner setting, characteristics of individuals, and implementation process.
Manavalan <i>et al</i> <sup>31</sup>	HT care is managed separately from HIV care by a medical doctor or clinical officer in a different department.	Conducted at the Moshi urban district of northern Tanzania at two HIV clinics located in government-funded primary health centres with approximately 2300 adults (1700 women and 600 men) with HIV	<ul style="list-style-type: none"> <li>▲ n=13 patients</li> <li>▲ Gender: 11 female, 2 male</li> <li>▲ Age: median age of 54 (IQR 41-65) years</li> <li>▲ Diseases: HIV and HT comorbidity</li> <li>▲ Educational level: none 3, primary 9, secondary or higher 1</li> </ul>	Perspectives and experiences of PLWH and HT were assessed. The in-depth interview guide was developed by an interdisciplinary team of physicians, nurses and social scientists from Tanzania and the USA with expertise in HT or HIV.

ART, antiretroviral therapy; CHC, Community Health Center; DKK, Dr. Kenneth Kaunda; DM, diabetes mellitus; FDGs, focus group discussions; HT, hypertension; N/A, not available; NCDs, non-communicable diseases; PHC, Primary Health Care; PLWH, people living with HIV; TB, Tuberculosis; T2D, type 2 diabetes; USAID, United States Agency for International Development; WR, West Rand.



or living in informal settlements<sup>21</sup> with limited financial resources.<sup>24</sup>

In the study by Leбина *et al.*,<sup>23</sup> the patient characteristics were not available and therefore not included, because the measure of the participants' responsiveness with regard to patients/users was assessed by measuring staff's perceptions of patient responsiveness.

### How were patient perspectives conceptualised?

A diversity of models and approaches were used to conceptualise patient perspectives and are presented in table 4.

### Emerging themes (patient perspectives)

The most prominent themes among patient perspectives and experiences on healthcare integration were travel and treatment costs, appointment systems, waiting times at the facilities and HIV-related stigma (table 5).

#### Travel and treatment costs

Patients in Khayelitsha, Langa and Soweto (SA) experienced excessive travel costs due to multiple appointments at separate clinics for HIV and T2D.<sup>21 24 26</sup> Some patients defaulted their appointments due to travel costs, which led to poor patient-provider relationships: 'If you come late or fail to come, the nurses will be shouting at you. But nobody really cares to know why I did not come. That's why I choose to stay at home some clinic days.' (patient).<sup>24</sup> In one of the facilities in Khayelitsha the services for NCDs (including T2D) and HIV were physically located in the same complex, but because the services were provided separately, the patients did not experience having coinciding appointments, and did therefore not save the travel expenses: '[...] No, it doesn't happen, I haven't had it yet [that the dates for the appointments coincide]. My appointments are separate.' (patient).<sup>26</sup> PLWH with comorbid HT reported concerns for additional costs of transportation and lost wages when attending integrated medicine refill locations and therefore often preferred to choose location closer to home or with perceived lower costs. However, when assessing actual incurred cost those in the integrated care group reported lower annual cost (US\$21 on average) than those in the non-integrated group (US\$91 on average). Non-integrated care for HT and HIV in Northern Tanzania was also associated with higher cost for antihypertensive medication, provider visits, transport to the clinic and the expense of a healthy lifestyle.<sup>31</sup> Participants attending integrated care for HIV and HT in Cape Town, South Africa reported that lower travel costs and time spent accessing different clinics increased the likelihood of treatment seeking behaviour and less defaulting.<sup>10</sup>

#### Continuity of care and appointment systems

As illustrated by the quote in the previous section, the facility in Khayelitsha (SA) did not provide coherent treatment for HIV and T2D even when the services were located in the same complex.<sup>26</sup> In Langa (SA) on the other hand patients could experience having clashing

appointments at two different clinics.<sup>26</sup> Visiting numerous separate clinics led to patients in Soweto (SA) receiving conflicting information from clinicians, because of poor interprovider communication: 'Last week the rheumatologist told me that my bones are getting closer to each other, they have inserted metals in my right foot. When I attended the diabetes clinic, the doctor asked me to exercise because I was adding more weight, but I can't exercise because of the surgery they did on my leg. My ARVs have amplified my appetite' (patient).<sup>24</sup>

In Durham patients were satisfied with NCD care received from their HIV providers, and generally less satisfied receiving NCD care from their primary care provider (PCP). They experienced a stronger patient-provider relationship with their HIV providers compared with their PCP. Patients valued interprovider communication, which some found was great, while others perceived inadequacies in communication between their providers. Overall, the patients preferred an integrated care model where all their care was consolidated in one place, with one provider: 'I wish my HIV doctor could provide everything...If I could get all my care in one place that would be wonderful rather than travelling to different places' (patient).<sup>28</sup>

Patients in Free State were glad to receive more comprehensive services after the integration of HIV care in PHC clinics: 'I feel the treatment they give us is better than before. We are seen quicker and everything is checked. I'm tested every 3 months for HIV and my glucose and blood pressure is checked every visit.' (patient).<sup>14</sup> While patients in Agincourt experienced rigid appointment systems after the implementation of the ICDM model into PHC facilities in which they were unable to access services for sudden-onset illnesses.<sup>25</sup>

In Cape Town, South Africa, PLWH and comorbid HT experienced a lack of continuity of care (different healthcare workers) but were generally glad for the more holistic treatment approach in the integrated healthcare clinics.<sup>10</sup>

#### Waiting times at the facilities

Long queues and waiting times prior to appointments at the facilities were experienced by patients in Langa and Khayelitsha, especially pronounced prior to clinical appointments for T2D. In the context of HIV services this was not a problem, where advancements have been made through MACs, which avoided overcrowding and reduced waiting times at the health facilities.<sup>21 26</sup> The integrated MACs for HIV, T2D and HT were likewise experienced to be time saving and preventing long queues in Kibera (Kenya).<sup>22</sup>

In Free SA, where the PHC clinics had integrated care for HIV and NCDs, the patients experienced staff shortage leading to negative provision of quality services and long waiting times in queuing prior to consultations.<sup>14 25</sup> PLWH with comorbid HT in Cape Town also had concerns related to longer waiting times in integrated healthcare facilities.<sup>10</sup>

**Table 5** Overview of key themes among patient perspectives for included studies (fragmented versus integrated care)

Article	Fragmented versus integrated care	Key themes among patient perspectives
Matima <i>et al</i> <sup>21</sup>	Fragmented care	<ul style="list-style-type: none"> <li>▶ Travel costs.</li> <li>▶ Long waiting times outside the clinics prior to appointments.</li> <li>▶ Incoherent treatment.</li> </ul>
Rawat <i>et al</i> <sup>14</sup>	Integrated care	<ul style="list-style-type: none"> <li>▶ Larger no of patients attending the clinic leading to staff shortage.</li> <li>▶ Long waiting times outside the clinics prior to appointments.</li> <li>▶ .Poor confidentiality of medical records leading to increased HIV stigma</li> <li>▶ Health education +more awareness of HIV leading to reduced HIV stigma.</li> <li>▶ Coherent services.</li> </ul>
Venables <i>et al</i> <sup>22</sup>	Integrated care	Integrated MACs considered acceptable: <ul style="list-style-type: none"> <li>▶ Time saving.</li> <li>▶ Preventing long queues.</li> <li>▶ Provided people with health education and peer-support.</li> <li>▶ Reduced HIV-related stigma.</li> </ul> Non-MAC members: Not knowing the existence of the clubs and confusing eligibility criteria
Lebina <i>et al</i> <sup>23</sup>	Integrated care	<ul style="list-style-type: none"> <li>▶ Separate medical records, waiting areas and queues leading to increased HIV stigma.</li> <li>▶ Poor compliance by patients: poor adherence to appointments and medications.</li> </ul>
Bosire <sup>24</sup>	Fragmented care	<ul style="list-style-type: none"> <li>▶ Travel costs leading to patients' defaulted appointments leading to poor patient-provider relationship.</li> <li>▶ Poor interprovider communication leading to incoherent treatment.</li> </ul>
Ameh <i>et al</i> <sup>25</sup>	Integrated care	<ul style="list-style-type: none"> <li>▶ Rigid appointment systems.</li> <li>▶ Long waiting times because of long breaks and late arrival of staff.</li> <li>▶ Staff shortage leading to negative behaviour of staff members.</li> </ul>
Knight <i>et al</i> <sup>26</sup>	Fragmented care	<ul style="list-style-type: none"> <li>▶ Travel costs.</li> <li>▶ Long waiting times prior to consultation</li> <li>▶ Incoherent treatment.               <ul style="list-style-type: none"> <li>– Clashing appointments in Langa.</li> </ul> </li> <li>▶ Poor patient-provider relationship leading to lack of knowledge about MACs.</li> </ul>
Moise <i>et al</i> <sup>27</sup>	Fragmented care	<ul style="list-style-type: none"> <li>▶ Some people living with comorbid diabetes and HIV were satisfied with their current separate treatments for HIV and T2D, while others uttered a desire for specialised care for comorbid patients.</li> <li>▶ Some people living with comorbid diabetes and HIV would like even more privacy for their HIV treatment.</li> </ul>
Mkumba <i>et al</i> <sup>28</sup>	Fragmented care	<ul style="list-style-type: none"> <li>▶ Satisfaction with NCD care received from HIV provider, and less satisfied receiving NCD care from PCP.</li> <li>▶ Stronger patient-provider relationship with HIV provider than PCP.</li> <li>▶ Would value a stronger interprovider communication.</li> <li>▶ A desire for an integrated care model where all their care was consolidated in one place, with one provider.</li> <li>▶ Positive towards increased participation from HIV clinic support staff</li> </ul>
Moucheraud <i>et al</i> <sup>29</sup>	Fragmented and integrated care	Fragmented (non-integrated care) <ul style="list-style-type: none"> <li>▶ Additional costs (ie, beyond costs already incurred for ART visits), costs of transportation to refill visits and lost wages during refill visits.</li> <li>▶ Refill location for medicines chosen primarily due to perceived lower medication costs and proximity/convenience (eg, distance to home).</li> </ul> Integrated care <ul style="list-style-type: none"> <li>▶ Lower annual care-seeking costs (US\$21 on average) than those in the non-integrated care group (US\$91 on average).</li> </ul>

Continued



Table 5 Continued

Article	Fragmented versus integrated care	Key themes among patient perspectives
Peer <i>et al</i> <sup>10</sup>	Integrated care	<ul style="list-style-type: none"> <li>▶ Removal of stigma attached to attending ART-clinic.</li> <li>▶ Long waiting times at clinics, being attend to later than other (non-HIV) patients.</li> <li>▶ Lack of continuity of care (different healthcare workers), but glad for holistic treatment approach.</li> <li>▶ Might lead to greater treatment seeking behaviour and less defaulters.</li> <li>▶ Less travel costs and time spent accessing different clinics.</li> </ul>
Muddu <i>et al</i> <sup>30</sup>	Integrated care	<ul style="list-style-type: none"> <li>▶ Few responses by patients about integrated HT/HIV care may be an indicator of limited knowledge about HT in HIV.</li> <li>▶ Participants reported gaps in clinician documentation (providers record clinical data in patients' personal books).</li> </ul>
Manavalan <i>et al</i> <sup>31</sup>	Fragmented care	<ul style="list-style-type: none"> <li>▶ Delayed or non-linkage to care for HT.</li> <li>▶ Minimal and/or low-quality counselling on HT.</li> <li>▶ High costs for antihypertensive medication, provider visits, transport to the clinic, and the expense of a healthy lifestyle.</li> <li>▶ All respondents conveyed a preference for integrated care due to convenience and efficiency.</li> </ul>

ART, antiretroviral therapy; HT, hypertension; MACs, Medication Adherence Clubs; NCD, non-communicable disease; PCP, primary care provider; T2D, type 2 diabetes.

### HIV-related stigma

Separate medical records, waiting areas and queues were experienced by some patients in Free State and the healthcare staff in Dr. Kenneth Kaunda and West Rand to increase HIV-related stigma; here illustrated by a patient: 'Those who [have] HIV, they are isolated to show the people that we are HIV [positive]',<sup>14</sup> and by a nurse: 'They feel like they are being isolated and they feel stigmatised and that other patients can see.'<sup>23</sup> Despite this, many participants in Free State reported a decrease in HIV-related stigma due to increased community support and through increased awareness of HIV at the community level.<sup>14</sup> In Cape Town, South Africa, PLWH experienced reduced stigma when attending integrated healthcare, instead of ART clinics.<sup>10</sup>

In Kenya, the integrated MACs were found to reduce HIV-related stigma as some MAC members experienced HIV being treated like '*any other chronic disease*'. While the overall perception was that the MACs reduced the stigma related to HIV, some PLWH that were not using MACs, thought they had to disclose their HIV status to join the clubs, thus fearing of being stigmatised, if someone from their community recognised them. This was, however, not a requirement for joining the clubs. This can be understood in the context of some non-MAC patients explaining the little knowledge they had of the existence of the clubs, while others found the eligibility criteria for the clubs unclear.<sup>22 26</sup>

In Thailand, people living with comorbid HIV and T2D uttered a desire for more privacy regarding their HIV treatment: '*I think if the hospital can separate HIV patients from [others] to make it more private, it'll be good*' (patient).<sup>27</sup> Whether this wish for more privacy was related

to HIV-related stigma is not mentioned explicitly in the article.

One study received few responses on patient perspectives which led the authors to hypothesise that patients had little information on HT.<sup>30</sup> In a study in Northern Tanzania among PLWH and comorbid HT attending non-integrated (separate) care participants reported delayed or non-linkage to HT care, low quality or minimal counselling on HT and thus expressed a preference for integrated care due to convenience and efficiency.<sup>31</sup>

### DISCUSSION

In this scoping review, we found that patient perspectives and experiences on integrated care for HIV, diabetes and HT were mostly positive, in particular reduced HIV-related stigma, reduced travel and treatment costs and a more holistic person-centred care.

We identified 13 articles eligible for this scoping review after applying a broad search strategy including publications between 1990 and 2021 with no geographical restrictions. This illustrates the limited number of publications regarding patient perspectives on healthcare integration of HIV, T2D and HT services. Of note, all published material was from within the last 5 years (2016–2021), indicating that this is an emerging research priority. Clearly, most research on patient perspectives has been conducted in SSA with only one article from North America<sup>28</sup> and one from Asia<sup>27</sup> while none of the other continents were represented. However, this might not be surprising as a rapid increase in the burden of diabetes, HT and other NCDs is meeting a growing population of PLWH in many countries in SSA. This epidemiological transition



resulting in a double burden of disease leaves many healthcare systems overburdened.<sup>6</sup> Interestingly, the only study from a high income setting (Duke University, USA) reported that the PLWH interviewed were highly satisfied with integrated care and preferred receiving primary care from their HIV-physician due to the high degree of continuity of care. This is in contrast to studies from SSA, where participants often experienced a lack of continuity of care in integrated care. This might reflect the high staff turn-over and treatment of PLWH or PLWNCD by healthcare professionals other than physicians.

The study settings could be divided into whether they had integrated care or not. Six studies, all conducted in SSA, tended to have some degree of integrated care, while seven studies reported on fragmented or partially fragmented care. A majority of the studies from SA (n=6) used the ICDM model<sup>32</sup> to conceptualise healthcare integration. However, there was a discrepancy between how healthcare integration was conceptualised by the ICDM model and the actual infrastructures in these study settings, for example, many of the places still having separate care for HIV and T2D.<sup>21 24 26</sup>

The diversity of concepts used to assess patient perspectives, underlines the complexity of the topic, and made it difficult to compare these concepts, however, some similarities were identified, indicating that some degree of universality exists when it comes to the needs and wishes of patients. The patient perspectives regarding travel and treatment costs, continuity of care and appointment systems, waiting times at the facilities and HIV-related stigma were identified as the most important themes.

All the studies conducted in fragmented healthcare settings in SSA mentioned travel (and partly treatment) costs as a major burden due to the limited financial resources of patients.<sup>21 24 26 28 29 31</sup>

There is no doubt that more integrated care could be cost and time-saving for these patients, though cost saving is not mentioned directly in any of the studies conducted in integrated healthcare settings.

Those accessing integrated care were usually satisfied with the holistic and coherent care received and reduced stigma due to attending a general clinic with non-HIV patients. However, more rigid appointment systems, a lack of continuity of care with conflicting messages from changing healthcare providers and long waiting times at facilities were experienced as downsides in some healthcare settings.

Among those using integrated care, some patients expressed areas of improvement. Patients from one study suggested improvements in relation to access to services for sudden-onset illnesses.<sup>25</sup> One approach for this problem could be to have some emergency appointment-times every day at the clinics, which was found to increase patient satisfaction in a publication by Richter *et al.*<sup>33</sup> Staff shortage,<sup>14 25</sup> long waiting times prior to consultations<sup>34</sup> and patients not knowing the existence of MACs, which provide fast access to medication<sup>22 26</sup> reflect the lack of (efficient) use of resources. In general, better coverage

with appropriately qualified healthcare workers is needed to ensure reliable healthcare services.<sup>23</sup>

In general, the findings of this review point towards the overarching challenge of integrative care to synchronise vertical, disease-oriented care with horizontal health systems strengthening programmes. The ideal being to be able to draft health service delivery programmes aimed at specific diseases in a manner that at the same time may drive improvement in the wider health system—a diagonal approach.<sup>35</sup>

### Strengths and limitations

To the best of our knowledge, this is the first systematic scoping review to assess patient perspectives on integration of healthcare for HIV and NCDs. The scoping review methodology and broad search terms, reflected in more than 5500 initial records identified, ensure a high sensitivity of our search strategy.

A limitation of the current scoping review is the singular focus on T2D and HT as indicator conditions. Other important diseases for integration would be mental health, cardiovascular disease or chronic kidney disease. However, T2D and HT represent the common, major chronic conditions in SSA. Another limitation is that grey literature was not included in the search. However, cursory searches in major search engines and reference lists of included articles have not provided additional findings. In addition, the perspectives of healthcare workers would be of interest but were not assessed in the current review.

A further weakness is that there were no studies of integrated care and management for HIV, DM and HTN—in other words a clinic that can manage patients with either HIV, DM, HTN or combinations of these. Most of the studies involved only a small component of care to be integrated (eg, screening) or they involved adding diabetes and HT services to HIV programmes, which excludes people without HIV from integrated care. Of note, no studies from Europe were identified, however, some hospitals in Europe are working on integrating services (eg, the multidisciplinary setup in Modena, Italy (unpublished, authors correspondence). There is a clear need for more research, including longitudinal and interventional studies from different healthcare settings.

### CONCLUSION

Only few articles in the peer-reviewed literature, with a limited geographical scope, were identified. However, all the publications were from 2016 to 2021, and the majority of the articles were from SSA (n=11), indicating that the topic is an emerging research priority in this region.

Patient's experiences with integrated care were reduced HIV-related stigma, reduced travel and treatment costs and more holistic person-centred care. Prominent concerns were long waiting times at clinics and a lack of continuity of care with the same provider. Non-integrated care was perceived as time-consuming and more expensive. Integration can save resources for health services,

which if reinvested can yield benefits for PLWNCs and PLWH alike. If additional services are simply added to existing ones (eg, diabetes screening within HIV programmes) it will lead to increased waiting times for participants. The articles included in this review are an important source of evidence for patient-centred integration of HIV and NCD healthcare services, potentially also as important evidence and lessons for high-income settings (eg, Europe). There is a paucity of evidence and further longitudinal and interventional evidence from a more diverse range of healthcare systems is desirable.

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