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Managing recurrent vulvovaginal thrush from patient and healthcare professional perspectives: A systematic review and thematic synthesis

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ABSTRACT

Objective: This systematic review aims to identify what is known about patient and healthcare professional experiences of managing recurrent vulvovaginal thrush by synthesising published findings.
Methods: Five databases were searched for studies on patient and healthcare professional experiences managing recurrent thrush. Two reviewers independently screened and quality assessed qualitative, quantitative, and mixed-methods studies. Findings from eligible studies were thematically synthesised.
Results: 720 papers were identified, and 29 were included. Four descriptive themes were developed to depict the repeated management of recurrent thrush. These themes were: (re)experiencing impacts, (re)identifying recurrent thrush, (re)considering consultations, and (re)trying treatments. An analytic high-order frame of 'interwoven and reoccurring uncertainties' was used to understand these themes.
Conclusions: Patients and healthcare providers face uncertainties when managing recurrent thrush. The inconsistencies raised across papers suggests an unaddressed gap in knowledge about patient experiences and their informational and support needs; this includes insights about this condition's diagnosis, management, treatment, impacts, and meaning.
Practice implications: This review has implications for patient education, health promotion, and communication between patients and providers. Our interpretations suggest the need for more research and resources to help support patients and clinicians in managing this condition to promote more understanding, communication, and collaborative care.

1. Introduction

There is growing recognition that managing common vulvovaginal conditions, such as recurrent thrush, is neither straightforward nor inconsequential [1]. Globally, 75% of people assigned female at birth will experience thrush, with symptoms including genital itching, burning, discomfort, and changes in vaginal discharge [2]. In the United States, an estimated 1.4 million annual doctor visits are for vulvovaginal thrush [3]. Most can be remedied quickly with antifungal medication, but for up to 6% of patients, this is a repeated or persistent experience, often labelled recurrent thrush [4]. More than 370 million people assigned female at birth will experience recurrent thrush during their lifetime [4]. Recurrent thrush can result in poor mental health, damaged relationships, and disengagement from medical care [5].

Clinical guidelines recognise recurrent vulvovaginal thrush as a distinct clinical and illness experience that requires special attention [6–9]. The Women's Health Strategy for England (2022) highlights the importance of targeted attention on experiences of gynaecological conditions [10]. Increasing awareness of the need to listen to patients includes The Cumberlege Report "First Do No Harm" (2020), which exposed how women's health concerns are often "dismissed, overlooked and ignored" and highlighted the need for increased research, awareness, and interventions [11]. Recurrent thrush is one of these overlooked areas with a dearth of research.

Reviews on recurrent thrush have been mainly quantitative and examined medication effectiveness [12], clinical guidelines [13], global prevalence [4], and self-treatment [14]. This suggests a possible lack of research insight into patients' and healthcare professionals' concerns, expectations, and priorities in managing recurrent thrush.

Our systematic review aims to identify what is known about patient and healthcare professional experiences of managing recurrent vulvovaginal thrush by thematically synthesising findings from existing studies. We aim to map evidence and find knowledge gaps to inform future research and produce implications for practice.

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2. Methods

2.1. Search strategy

The search strategy was developed with an information specialist to explore patient and healthcare professional experiences of managing recurrent vulvovaginal thrush. Patient representatives with lived experience of recurrent thrush reviewed our search strategy and added terms including 'persistent' and 'returning'. Our research question was: *what is known about patient and healthcare professional experiences of managing recurrent vulvovaginal thrush?*

TF searched the electronic databases Medline, Embase, Cinahl, PsychInfo, and Social Science Citation Index in December 2021 and in January 2023. Forward and backward citation searches were also conducted. See Appendix 1 for an example search.

2.2. Study selection

Inclusion criteria was any peer-reviewed research article that assessed an element of patient or healthcare professional experience of recurrent thrush (including insights from pharmacists). No restrictions were placed on publication date, language, or country. Exclusion criteria

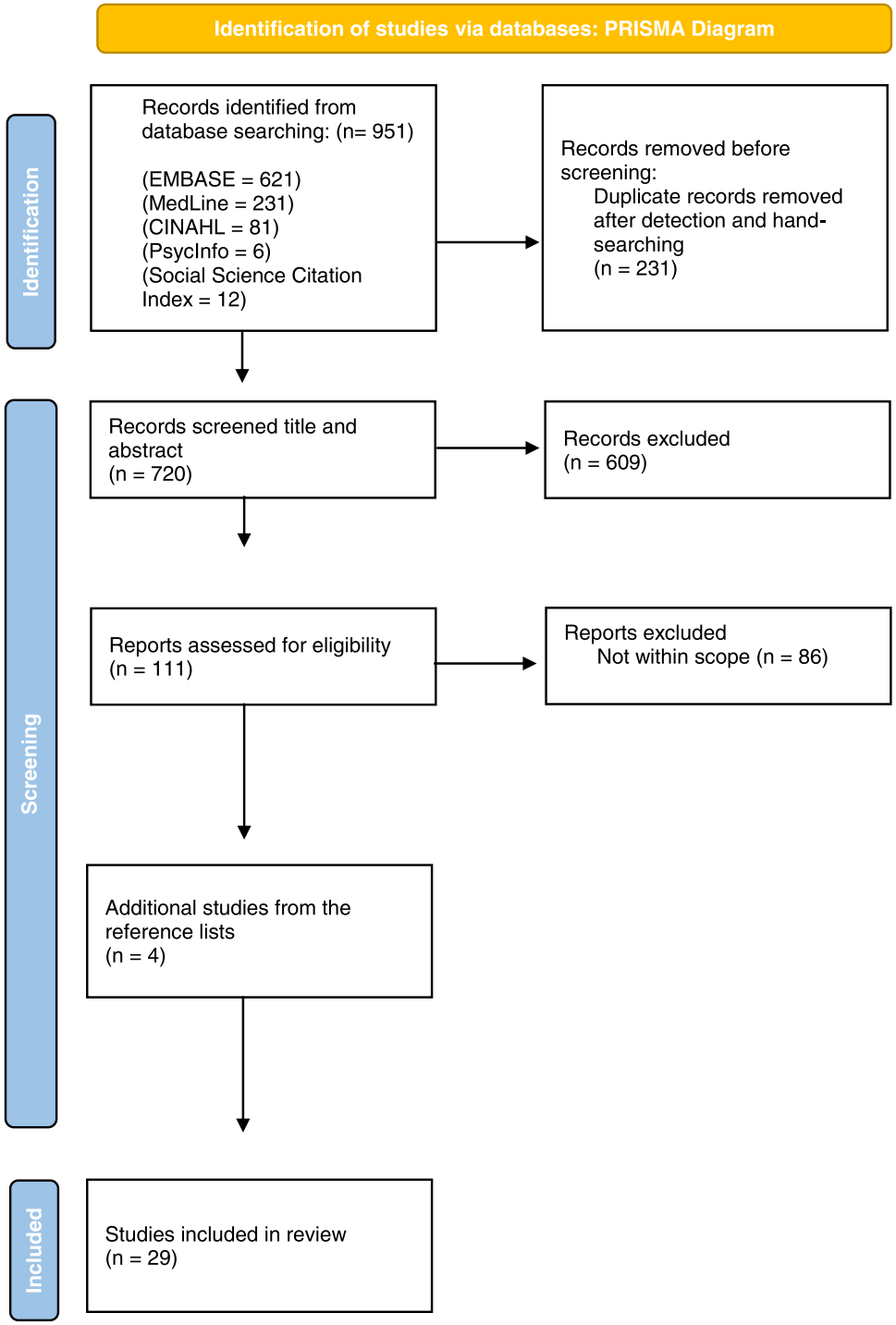

Fig. 1. PRISMA diagram of included studies.

were non-research papers, animal models, laboratory studies, background articles, and studies that only discussed acute thrush experiences. Books and dissertations were excluded for practical reasons.

Two independent reviewers (TF and AT, qualitative researchers) conducted double-blind title and abstract screening and then full-text screening in Rayyan [15]. During the full-text screening, papers were excluded where experience of recurrence was not mentioned. Papers of interest that were not in English were translated by TF or colleagues who spoke the relevant languages (French, Russian, Ukrainian). Disagreements were resolved through discussion (Fig. 1).

2.3. Data extraction and analysis

Data extraction was carried out by TF and checked by AT using a standardised form. A streamlined version of this extraction form is available (Fig. 2).

Included papers were imported into NVivo12 [16]. The findings and discussion sections of included studies were analysed using thematic synthesis [17]. Thematic synthesis was chosen because it is congruent with our aim to map the existing evidence and identify potential knowledge gaps [18]. TF coded line-by-line with codes grouped based on similarities and differences to produce descriptive themes. The One Sheet of Paper (OSOP) [19] mind-mapping approach helped refine and organise these descriptive themes. A high-order analytical theme was also developed through discussion to encapsulate the review's findings and address our aims. This approach has been successfully used elsewhere [20,21].

2.4. Quality assessment

TF and AT quality appraised included studies using the Mixed Methods and Quality Appraisal Checklist (MMAT) (See Appendix 2) [22]. We did not use this tool to exclude studies based on perceived low quality, but to be transparent about strengths, limitations and perceived quality of included studies.

2.5. Protocol and registration

Our review is registered on Prospero: International Prospective Register of Systematic Reviews, registry number CRD42021298563 [23].

3. Results

The search identified 720 papers and 29 were included for thematic synthesis. Eight papers were qualitative, and 21 were quantitative, none used mixed-methods. Qualitative papers used in-person or telephone interviews. Quantitative papers mainly employed surveys, with one prospective cohort study and one international online omnibus. Papers were published between 1994 and 2022. Most studies were from the UK (n = 6), the USA (n = 7), and Australia (n = 5). Nineteen focused on patient experiences, seven on healthcare professionals' experiences, and three on both. Some challenges with the literature included variable definitions of recurrent thrush across papers and unclear presentation of findings regarding acute and/or recurrent experiences.

3.1. Variable definitions

Terms for recurrent thrush varied; it was also called 'recurrent vulvovaginal candidiasis' (RVVC) or 'recurrent yeast infections'. Most papers defined recurrent thrush as four or more symptomatic episodes of vulvovaginal candidiasis within a year [2,5,24–29] while others did not offer a definition. Some papers used the term "chronic thrush" interchangeably with recurrent thrush, while others used it to denote a distinct experience where symptoms may be ongoing or constant [30–35]. These varying definitions influenced study sampling and the presentation of findings.

First Author	Year	Country	Population	Study Design	(Re)Experiencing Impacts	(Re)Identifying Recurrent Thrush	(Re)Considering Consultation	(Re)Trying Treatments
PATIENTS								
Steel	1996	UK	100 women with diabetes (12 with repeated episodes, 6 with vaginal swabs for thrush)	Interviews & Survey		X		X
O'Dowd	1996	England	490 women with vaginal symptoms (80% with recurrent symptoms, 75% diagnosed with thrush)	Survey	X	X	X	X
Irving	1998	UK	28 women with recurrent thrush	Interviews & Survey	X		X	X
Chapple	2000	UK	30 women with thrush (1/3 with recurrent thrush)	Interviews	X	X	X	X
Novikova	2002	Ukraine	83 women with recurrent thrush	Interviews			X	
Karasz	2003	USA	44 women (20 with recurrent thrush)	Interviews	X	X	X	X
Pirotta	2003	Australia	1298 women (over 7% reported 4+ thrush episodes in the previous year)	Survey			X	X
Ehrstrom	2007	Sweden	33 women with recurrent thrush	Survey	X	X		X
Morgan	2009	Australia	6 women with chronic thrush	Interviews	X		X	X
Johnson	2010	France, Germany, the Netherlands, Sweden, UK, USA	7955 women (thrush episodes 2–5 times = 45%, 5–20 times, 29%, and 9–20 times = 6%). Time duration not specified.	Omnibus & Survey		X	X	X
Nyirjesy	2011	USA	481 women with chronic vaginitis (448 with thrush)	Survey				X
Aballéa	2013	France, Germany, Italy, Spain, UK, USA	620 women with recurrent thrush	Survey	X			X
Hong	2013	Australia	50 women with chronic thrush	Prospective Cohort Study		X		X
Zhu	2016	China	102 women with recurrent thrush	Survey	X			
Adolfsson	2017	Sweden	16 women with recurrent thrush	Interviews	X		X	X
Aniebue	2018	Nigeria	209 women (22 with 3+ thrush episodes)	Interviewer-administered questionnaire		X		X
Yano	2019	USA	284 women (34% with recurrent thrush)	Survey		X	X	X
Fukazawa	2019	Brazil	100 women with recurrent thrush	Survey	X			
Strydom	2022	Australia	10 women with recurrent thrush	Interviews	X	X	X	X
HEALTHCARE PROFESSIONALS								
Taylor	1994	USA	123 family physicians, obstetricians and gynecologists	Survey			X	
Watson	2000	UK	19 pharmacists	Interviews			X	X
Engberts	2008	Netherlands	380 general practitioners	Survey		X		X
Adib	2011	Lebanon	359 OBGYNs	Survey				X
Watson	2012	Australia	66 medical practitioners, dermatologists, nurses and allied health professionals	Survey				X
Innamaa	2016	UK	41 clinicians	Survey			X	
Filippova	2020	Russia	150 pharmacy workers	Survey			X	
BOTH								
Sihvo	2000	Finland	299 women (29 who used thrush medication 2+ times in the past 6 months), 341 gynaecologists and specialists in general practice	Survey		X	X	X
Theroux	2002	USA	11 women (10 with thrush), 3 pharmacists	Interviews	X	X	X	X
Erfaninejad	2022	Iran	24 women with recurrent thrush, 2 gynecologists	Interviews	X	X	X	X

Fig. 2. Included studies and relation to the four themes identified.

3.2. Acute versus recurrent experiences

While the included papers offered insight into recurrent thrush experiences, they often presented unclear sample descriptions and indiscrete findings. For example, some interview studies focused on acute thrush, but had participants who spoke about recurrent experiences [31,35]. Other papers examined persistent vaginal discomfort, including recurrent thrush, amongst other conditions, but the authors did not separate findings based on patient diagnosis [36,37]. Further, most literature on healthcare professionals focused on acute cases or conflated episodic and recurrent experiences. If patients are consulting for their first acute episode, it is uncertain whether the treatment will be successful, or whether there will be recurrence. Therefore, we included papers on how healthcare professionals manage thrush with particular attention to mentions of recurrent cases.

3.3. Descriptive theme summary

We developed four descriptive themes covering the reported experiences of patients and healthcare professionals managing recurrent thrush. While many themes appeared in the papers, the descriptive themes presented highlight the repetitive and cyclical aspects of managing recurrent experiences. Fig. 3 illustrates the connected relationship between our themes.

3.3.1. (Re)Experiencing impacts

Survey and interview participants expressed similar impacts from recurrent thrush, including limited daily activities, financial and opportunity costs, damaged relationships, negative mental health, stigma and disclosure.

3.3.1.1. Limited daily lives. Patients with recurrent thrush reported lower quality of life and reduced overall satisfaction with their health [5,33]. These findings were described in studies from the UK, USA, Europe, and Brazil [5,27,33]. Impacts included being unable to wear certain clothes, sleep at night, socialise, concentrate at work, or participate in hobbies and sports [5,27]. A Swedish patient with recurrent thrush explained this frustration:

> *It doesn't really matter what I do. Nothing seems to work so why should I even get dressed to go anywhere? I don't feel like it. It's just to bite the bullet. If you haven't had a yeast infection…you don't know what you are missing. [38]*

Participants expressed discontent with limiting their daily activities due to the discomfort caused by symptoms and concerns around further recurrence [1,31,35].

3.3.1.2. Financial and opportunity costs. Costs of recurrent thrush included loss of time and money. Patients expressed frustration about the time required to contact a doctor's office, schedule appointments, and request leave from work [35]. In health systems where patients pay for medication or appointments, there were also financial considerations.

> *I want to express that it's insanely expensive; I must have spent well over a thousand dollars on this problem in the last 18 months. You know, for all the treatments. [1]*

Patients would sometimes see a primary care doctor to receive medication at a lower cost or free under healthcare coverage [35]. Costs sometimes prevented patients from continuing care or following long-term treatment [1].

3.3.1.3. Stigma and disclosure. Patients perceived external stigma around thrush and its recurrence. Through interviews and surveys, patients reported feeling "stigmatised", "dirty", "inadequate", and "embarrassed".

[27,29–31]. Many qualitative studies reported that these experiences were a barrier to seeking medical help or speaking to loved ones [1,31,35,38]. Some Australian interviewees found support online by interacting with others anonymously [1]. In one American survey on vaginal discomfort, a patient described feeling that thrush was a particularly stigmatising gynaecological issue:

> Women don't talk about it. I can talk more about my fibroids than I can about the yeast infection, which is more private. I don't want to talk to anyone about it. [36]

Papers found that recurrent thrush significantly impacted patients' lives and influenced how they understood and approached recurrent thrush. However, papers on healthcare professional experiences did not explore these physical, emotional, financial, and social impacts.

3.3.2. (Re)Identifying recurrent thrush

Multiple challenges with identifying recurrent thrush were connected to inconsistent examinations, sporadic swab collection, diagnostic delays, and self-(mis)diagnosis. Study samples included patients with "culture-positive" [5] or "proven" vulvovaginal candidiasis [29], and those who self-selected as having recurrent thrush [31,35]. Therefore, papers offered insight into both clinical investigations and self-diagnosis. Healthcare professionals and patients presented various perspectives about the investigative process and the perceived utility of diagnosing recurrent thrush.

3.3.2.1. Inconsistent examinations. Many patients consulted healthcare

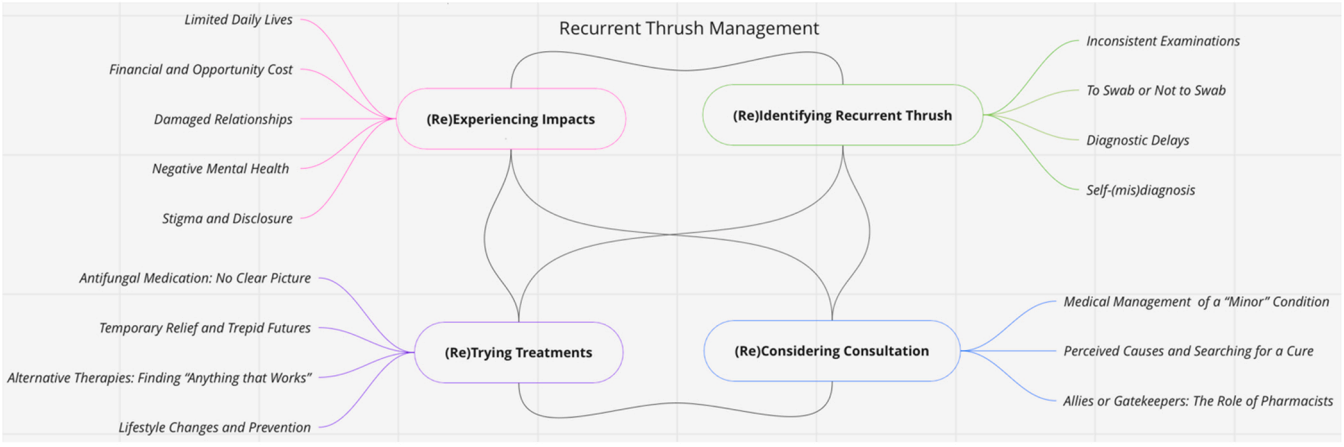

Fig. 3. Descriptive themes and sub-themes.

professionals about symptoms of thrush, including when a pattern of recurrence developed. A common finding across various countries was inconsistency in healthcare professionals performing pelvic examinations. One Dutch study found that a substantial number of general practitioners reported basing their diagnosis of thrush on pelvic examination alone without performing further swabs or microscopy [25]. However, an international online omnibus found that roughly half their patient sample had not been examined "every time" or "most times" when presenting with thrush [40]. The lowest examination rates were reported in the UK, and the highest in Germany [40]. This inconsistency was reported between health systems and countries, but also within similar practices.

A lack of pelvic examinations could prevent accurate diagnosis and treatment, as expressed by one Iranian gynaecologist:

> *[If treatment is based only on patient explanations and not examination] this increases the possibility of prescribing the wrong medicine, and as a result, the patient returns to the doctor's office and expresses dissatisfaction with the recovery process. [39]*

There may be cultural differences in attitudes to pelvic examinations – for example, while some studies have suggested that women in the UK are not particularly embarrassed or concerned [31], some Iranian patients with recurrent thrush said they were worried about potential damage to the vagina or further infection [39].

3.3.2.2. To swab or not to swab. A US survey that included patients with recurrent thrush found that laboratory tests were sporadically performed [2]. While studies on healthcare professionals' practices often did not differentiate between a patient's first consultation and subsequent visits, a Dutch survey suggests that general practitioners obtained cultures more often when they suspected recurrent instead of acute thrush [25]. Some Australian patients felt their healthcare professionals did not follow structured diagnostic or testing guidance [1]. When swabs were performed, patients felt frustrated and confused when the results were negative for thrush; however, anti-fungal medication could influence these results [1,32]. While positive cultures provided more answers, patients were irritated to undergo repetitive tests while awaiting a diagnosis:

> *It took quite a while [for a diagnosis], probably nearly a year even. I still don't feel like anyone's taking it particularly seriously. I've had a million swabs and a million blood tests. It always comes back as the same thing, as Candida. [1]*

These ambiguous results led to patients worrying about whether other vulval health conditions were being overlooked and longing for timely answers [1,38].

3.3.2.3. Diagnostic delays. Diagnosing recurrent thrush often involved multiple appointments and repetitive investigations. Therefore, receiving a diagnosis could take considerable time, and one Australian study reported diagnostic delays up to three years [1]. A Chinese survey of recurrent thrush patients found repetitive symptoms enduring from 6 months to 10 years [29]. Although recurrent thrush is diagnosed as four or more discrete episodes per year, there is no diagnostic nomenclature for those who had symptoms on a chronic or persistent basis [32].

3.3.2.4. Self-(mis)diagnosis. Patients and healthcare professionals supported self-diagnosis as a practical and responsible decision [2]. Interviews suggested that American patients with a previous diagnosis of thrush and experience with recurrence were more able to correctly self-diagnose subsequent episodes [35]. Patients with recurrent thrush were able to monitor and "tune into" their symptoms and collect "bodily information" which they used to guide diagnosis and actions [35]. However, some studies found higher frequencies of other vaginal infections such as bacterial vaginosis in women with recurrent thrush, raising concerns around potential misdiagnosis or co-morbidities [24]. These ambiguities regarding how best to identify recurrent thrush extended into who was best suited to lead management.

3.3.3. (Re)Considering consultation

Differences in expectations, perceptions, and priorities mean that patients may seek care from professionals and/or self-manage at different points in their experience [35,41,42]. Included papers highlighted tensions around what healthcare professionals and patients considered a serious condition, a cure, and an issue worthy of consultation.

3.3.3.1. Medical management of a "minor" condition. A consistent finding was that patients thought that recurrent thrush was considered a minor condition by healthcare professionals [1,30,31,36,43]. In these cases, patients found healthcare professionals were not as supportive or understanding as they had expected or hoped. One UK patient who had episodes of thrush every six weeks explained:

> *GPs tend to pass [thrush] off as a minor complaint, and one they don't take very seriously*. [31]

Other dissatisfaction included the brevity of medical appointments and distant patient-practitioner relationships [30]. Further, patients perceived general practitioners to have limited knowledge and expertise on recurrent thrush, and this led to a "loss of confidence" in their management approach [1,31]. Papers on healthcare professionals' views did not enquire into how clinicians understood or prioritised recurrent thrush.

Positive interactions with healthcare providers included an integrative and patient-centred approach that was tailored to the patient's particular management journey and acknowledged uncertainty [1,30].

Studies found that patients may be referred, or may self-refer where possible, to other healthcare professionals, such as gynaecologists, vulval dermatologists, physiotherapists, nutritionists, or naturopaths ([1,30,44]. GPs made referrals to offer further help as described by one Australian patient:

> *She [a GP] said, you know, seeing as, we're not getting on top of it, you're probably going to have to go see a specialist, you have to work with somebody who kind of lives and breathes this. [1]*

However, this approach was not always successful, as some primary care doctors would not refer, or the patient felt that the specialist also had limited understanding of recurrent thrush [1,35]. A survey of nurse practitioners in UK vulval clinics found that while chronic thrush was identified as an area for follow-up care, patient information leaflets and guidelines were inconsistently and infrequently available [45].

Whether healthcare providers were able to meet expectations or not, patients often relied on self-education through the Internet, media, or friends to cope with their symptoms [1,31,35–37,40].

3.3.3.2. Perceived causes and searching for a cure. Willingness to consult was also influenced by understandings of recurrent thrush and outlooks towards potential causes and cures. Identifying a cause for recurrence was a priority for many patients [2,31,35,40,42,46].

Some patients felt that their physical condition caused recurrence, such as their allergic tendencies, pelvic floor tone, vaginal tissue health, vaginal pH, weight, and excessive sweating [1,39]. Many patients identified recurrent thrush seemingly operating in line with their menstrual cycle and hormonal changes [1,31,35,38,39]. Contraception and intercourse were also perceived as potentially contributing to recurrence [39].

Some patients considered genetics to be a cause and that recurrence would be inevitable, as expressed by one woman with 18 years of recurrent thrush:

I do not like to see a doctor because my mother, despite being 50 years old, still suffers from this infection and medical treatments have not been effective. I believe that genetics is very influential, and I think my genes are the same as my mother's, so treatment is useless. [39]

These beliefs that recurrence was unavoidable or incurable could discourage patients from seeking consultations. Interviews with US and Australian women with recurrent thrush and vaginal discomfort stated concerns about clinicians' inability to explain the repetition of symptoms [1,36]. A UK patient survey found the most common patient concern was finding no cure for recurrent thrush [33]. In another UK interview study, patients perceived that healthcare professionals offered temporary fixes for acute symptoms rather than permanent solutions for recurrent problems as explained by one woman who had four attacks of thrush in six months:

GPs prescribe short-term cures, not long-term cures. Self-management is better. [31]

Included papers suggest a mismatch between patient and healthcare professional understandings regarding what constituted a cure and these perceptions impacted how patients approached healthcare professionals and/or self-managing.

3.3.3.3. Allies or gatekeepers: the role of pharmacists. Pharmacies occupy a pivotal space in recurrent thrush management as patients may visit them to collect prescriptions, purchase over-the-counter remedies, or seek guidance and recommendations. Due to their boundary-spanning role across clinical care and self-management, pharmacists may be understood and interacted with by people with symptoms as either allies or gatekeepers to receiving antifungal medication. A Russian paper found that patients who had previously consulted a doctor about recurrent thrush visited the pharmacy to find "something new" [43].

Patients who had consulted a general practitioner previously were more likely to self-manage using over-the-counter medications [31]. A survey of US physicians found that if symptoms recurred, they would encourage patients to use antifungal medication without consultation [47]. Reasons included viewing antifungals as offering "earlier treatment", "empowerment of women" and involving fewer medical office visits [47]. A US interview study found that many patients prefer to "bypass the middleman" and self-treat [35]. However, concerns from healthcare professionals that women would self-treat incorrectly and no longer consult were also prevalent in papers published soon after antifungal medication was widely re-classified as 'over-the-counter' in the 1990s, making the self-treatment more accessible [47].

Included papers found that pharmacists held divergent beliefs about whether patients could or should self-manage thrush and if consulting a general practitioner was necessary [35,41]. An American interview study highlighted these pharmacist debates:

A lot of times women have already had one [episode of thrush]. They know what it is, they know the products are available, so why go through that middle thing if this [over-the-counter treatment] is going to work? [35]

It's so heavily advertised, in every women's magazine—that you can take care of it [thrush] yourself: what do you need a doctor for? I don't agree. [35]

Pharmacists suggested that missing information made them cautious about providing medication. A UK survey of pharmacists revealed suspicion that patients did not always provide the "full story" nor "truthful accounts" when questioned [41]. Yet, pharmacists recognised that if they refused to sell antifungal medication, women could simply go elsewhere.

If the customer has seen a treatment advertised but her symptoms do not suggest that thrush is the problem, the pharmacist could say no, I won't sell an anti-fungal, but the woman would go to another pharmacy to ask for the product. [41]

While some pharmacists expressed concerns about patients' determination to attain antifungal medication, the root of these fears was not reported. Patients and healthcare professionals held various views on the appropriate management pathways for recurrent thrush, and these tensions also influenced attitudes towards available treatment options.

3.3.4. (Re)Trying treatments

Patients with recurrent thrush often employed a "trial-and-error" process of trying and retrying different treatment options, including antifungal medication, alternative therapies, and lifestyle changes [35,39]. Facilitators and barriers to (re)trying treatment included frustration with symptoms returning, a lack of collaborative care, and unknown side-effects.

3.3.4.1. Antifungal medication: no clear picture. Long-term antifungal maintenance therapy is the current treatment recommendation for recurrent thrush [27,32]. However, included papers found that healthcare providers varied in prescribing patterns, but were likely to recommend various treatment forms and combinations of oral tablets, topical creams, and vaginal pessaries [24–26]. A paper on general practice in the Netherlands reported that clinicians' treatment of recurrent thrush was varied, making it challenging to create a "clear picture" [25].

While antifungal medication could be prescribed or accessed through a pharmacy, an Iranian patient explained that it could be difficult to access maintenance treatment:

Nobody has actually offered me that [maintenance treatment]. Even the chemist has never mentioned it. Like, you know, when I go see the pharmacist for my creams, obviously I'm quite well known around the different shops when I go there. But nobody's said to me, hey, do you want to do this long term or anything like that. [39]

Further, while some patients became familiar with their condition over time, they felt "not included" in treatment decisions [39].

[My GPs] don't listen, they don't understand the condition and they insist on choosing the treatment for me and would give me like a topical cream, which I say doesn't work for me. And it was really infuriating, again, because there was someone not listening to my clinical history or my experience and telling me what they know is best.

[39].

3.3.4.2. Temporary relief and trepid futures. Antifungal medication offered temporary relief for many patients, only for symptoms to return shortly after [1,35,38]. As one Swedish woman described: "*The meds can give temporary relief but […] the symptoms always come back*" [38]. A survey of the US and Europe found that over 60% of patients who completed antifungal maintenance treatment experienced relapses [27]. Temporary relief from symptoms had a pronounced and positive effect on patient lives and their hopes for the future [38]. However, patients also worried about relapses and being on medication for months, years, or possibly decades.

I think fluconazole is a pretty hardcore drug and telling someone to take that three to six months, this is one thing, but taking it once a week for the rest of your life just seems really, really full on. [1]

Patients' concerns about long-term medication for unclear durations included fears of becoming tolerant to medication or enduring unknown long-term side effects [27,33]. Several patients mentioned that their poor mental health had been a barrier to pursuing or adhering to treatment [39]. Frustration occurred for patients offered the same intervention repeatedly and finding it ineffective or only temporarily effective [39]. The prospect of long-term medication concerned

participants, especially those thinking of having children, as oral antifungal tablets are contraindicated in pregnancy [27,31,33,39]. These concerns led some patients to avoid starting or completing antifungal medications.

3.3.4.3. Alternative therapies: finding "anything that works". Some patients reported that complementary and alternative medicine practitioners offered more supportive environments and hope for the future [30]. Alternative therapies were sometimes used after other medication options had been exhausted or ineffective. Surveys found that patients previously diagnosed with thrush or who had seen numerous healthcare professionals were likelier to use alternative approaches [34]. These methods included probiotics, yoghurt, garlic, vinegar, other homoeopathic remedies, and traditional medicine [28,30,31,41,44]. A 50-year-old woman from the UK who had lived with recurrent thrush for 15 years said she had tried "every pessary, tablet, and cream" and only found relief from eating more yoghurt and applying it to her genitals [31].

General practitioners and specialists had mixed reactions regarding the effectiveness of alternative therapies [1]. A survey of Australian gynaecologists found that they were eager to find "anything that works" for patients with recurrent thrush [28]. Some gynaecologists suggested returning to the basics when patients had tried various treatments.

> *Exclude all treatments: return to warm water spray and non-touch dry. Patients I see already had more treatments than I could think of. [28]*

3.3.4.4. Lifestyle changes. Lifestyle changes were often identified by patients and healthcare professionals to help treat recurrent thrush symptoms or prevent recurrence. Patients consulted healthcare professionals and online resources for advice, but found that information was lacking [39].

Avenues explored included avoiding sugar consumption, perfumed soaps or detergents, panty liners, vaginal gels, and washing more or less often [2,28,39,40,46]. Others attempted to reduce the stress in their life caused by work and other factors [39].

> *I still feel like there's a lot of information lacking. So, for example, I would drive myself crazy trying to work out, you know, if I'm somehow reinfecting every time it happened, I would hot wash my sheets, hot wash my towels, disinfect my lounge, and disinfect my chairs; it's not like I sit on them without underwear. I would just go crazy with everything. [1]*

In cases that were not successfully remedied by treatment or lifestyle changes, patients and healthcare professionals expressed desperation for permanent solutions, but found that this was limited by unclear pathways, challenges with identifying symptom triggers, and continued recurrence.

3.3.5. High-order analytic theme: interwoven and recurring uncertainties

The included studies reported different perspectives across various regions and a few decades, with similarities as well as differences in patients' and healthcare professionals' approaches to managing recurrent thrush. Each descriptive theme can be framed as an uncertainty. These uncertainties raised questions for both patients and healthcare professionals including 1) What matters about this condition? 2) Are investigations needed? If so, when and how? 3) Is this an issue worthy of medical attention? and 4) Which treatment options are worthwhile? These themes can be seen as knotted ambiguities that patients and healthcare professionals may understand and address differently. Further, these uncertainties may overlap, evolve, accumulate, and

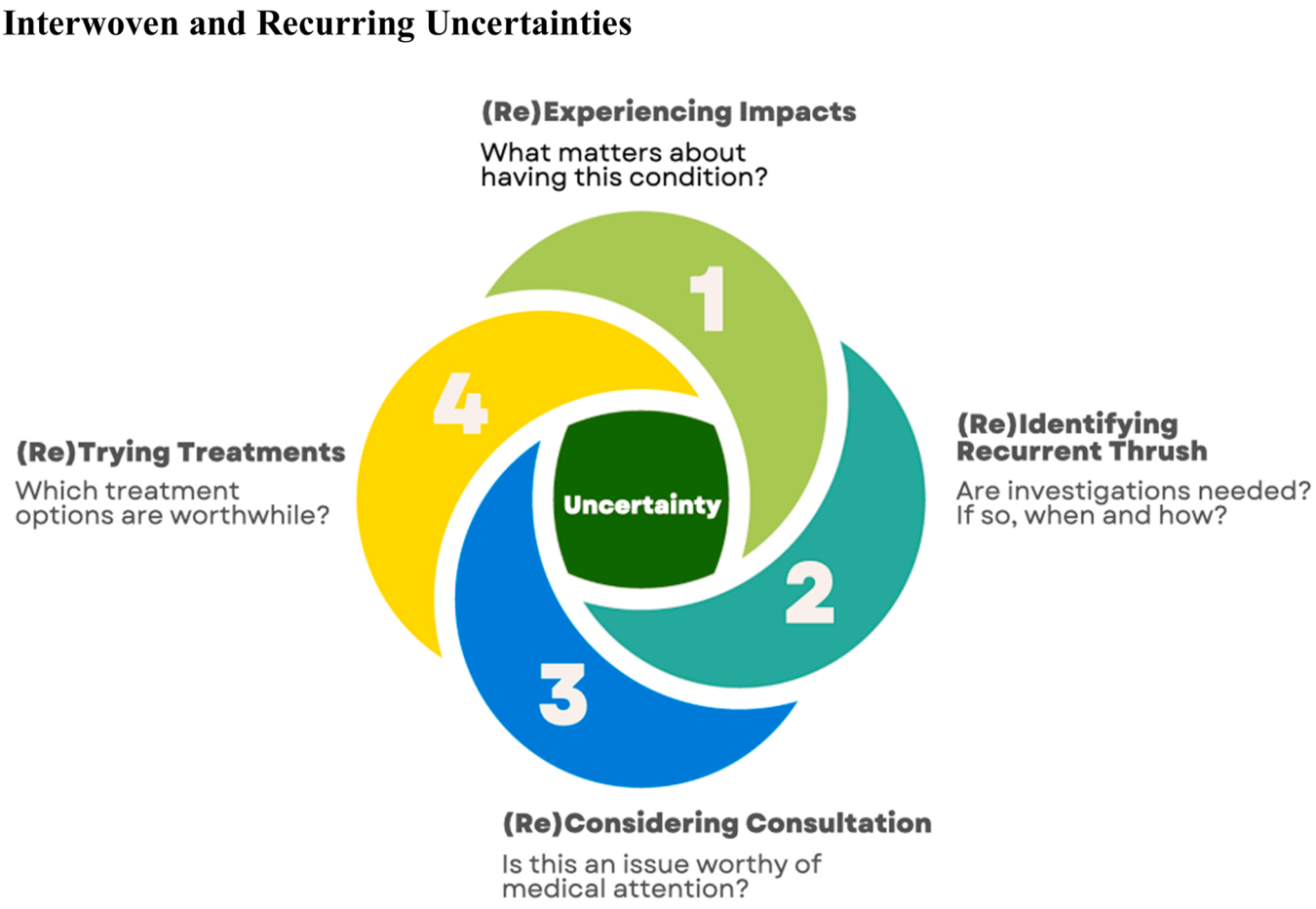

Fig. 4. Interwoven uncertainties as an analytic frame across the four descriptive themes.

fluctuate over time based on experience and changing priorities. Fig. 4 illustrates this interwoven experience.

When treatment attempts failed to stop recurrence, patients had to re-navigate uncertainties around whether they would ever get better, whether a diagnosis was useful or possible, who could offer support, and what treatments and services they should try now and next. The management of recurrent thrush, who was involved in it, and whether patients, pharmacists, and clinicians should operate exclusively, in combination with others, and in what order, differed among studies. Managing recurrent thrush was further complicated by differing expectations between healthcare professionals and patients regarding what constituted a serious problem, a minor concern, a diagnosis, a treatment, and a cure. These uncertainties could contribute to diagnostic delays, disengagement from medical care, and hopelessness about moving forward. Recurrent thrush management is often construed as straightforward with one-off treatment plans and resolution. However, this model of knotty considerations helps unsettle these assumptions for patients and healthcare professionals.

4. Discussion and conclusion

4.1. Discussion

Included papers on recurrent vulvovaginal thrush present interwoven and recurring uncertainties around how to understand, prioritise, and manage this condition for both patients and healthcare professionals. These uncertainties involved (re)experiencing impacts, (re) identifying recurrent thrush, (re)considering consultations, and (re) trying treatments.

This systematic review is the first, to our knowledge, to examine patient and healthcare professional accounts of managing recurrent thrush. Strengths include the integration of both perspectives and inclusion of qualitative and quantitative studies across a wide geographical span and time, demonstrating a degree of consistency and endurance of themes. The recent publication of papers suggests a renewed interest in this topic and an unaddressed gap in knowledge about patients' experiences and their informational and support needs.

Limitations include the diverse approaches across papers to defining, diagnosing, and documenting recurrent thrush. This review raises concerns over the classification of recurrent thrush and points to the need for further research on understanding what is classified under this condition and why.

Most study participants were white, cis-gender, and many were involved in clinical trials, and therefore, their experience may not translate to other groups such as racialised and gender diverse people navigating everyday life. Papers rarely considered whether patients had comorbidities or other bodily circumstances (e.g., pregnancy) which affected their experience. Insights from other healthcare professionals, such as midwives, who may treat recurrent thrush in delivering antenatal care, were not covered in the literature. Further, while this review attempted to bridge patient and healthcare professional perspectives, drawing comparisons can be difficult as studies did not ask equivalent questions to the two groups.

This review focused on how patients and practitioners experience the management of recurrent thrush. Tensions appeared in patients' reports of symptoms and perceived dismissal and trivialisation of recurrent thrush as a minor complaint. Uncertainty around navigating conditions often perceived as trivial was raised in several different forms by both patients and healthcare professionals, building on a wide body of work on this topic [48,49]. This uncertainty and trivialisation is also a gendered experience as existing literature reports that conditions that affect women and people assigned female at birth are often dismissed or overlooked, especially concerning common gynaecological conditions [50–52]. This review contributes to a growing body of work recognising that recurrent, persistent, and chronic gynaecological conditions are overdue for academic and clinical attention [53–55].

4.2. Conclusions

This review identified four descriptive themes, representing the literature on patient and healthcare providers experience of managing recurrent thrush. We conclude that recurrent thrush presents interwoven uncertainties including whether this is a condition worthy of concern, investigation, medical attention, and care. Further studies could explore how these ambiguities affect patients' and healthcare professionals' actions, decisions, and conclusions to help move towards collaboratively unpicking these uncertainties.

4.3. Practice implications

Included papers demonstrated that recurrent thrush is often approached by health services and researchers within the framework of acute thrush, with episodes seen as distinctive and relatively easily resolved or resolvable. This approach leads to tension as recurrent thrush has unique impacts, considerations, and challenges. Many papers conflated acute and recurrent experiences and overlooked that the impacts of recurrent thrush are not isolated occurrences, but repeatedly interrupt and inhibit patients' lives. This review highlights the need for consistency across definitions, sampling, and capturing patient journeys. Papers have yet to fully explore how recurrent thrush care pathways become cyclical, cumulative, or expansive as patients' choices relate to past decisions, outcomes, and experiences. Further, there is a dearth of information surrounding how healthcare providers understand recurrent thrush and its impacts as this has not been explored. Our interpretations suggest the need for more research and resources to help support patients and clinicians in managing this condition to promote more understanding, communication, and collaborative care.

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CRediT authorship contribution statement

Abigail McNiven: Writing – review & editing, Writing – original draft, Validation, Supervision, Conceptualization. **Sarah Tonkin-Crine:** Writing – review & editing, Supervision, Conceptualization. **Sue Ziebland:** Writing – review & editing, Supervision, Conceptualization. **Amelia Talbot:** Writing – review & editing, Validation. **Gail Hayward:** Writing – review & editing, Supervision, Conceptualization. **Tori Ford:** Writing – review & editing, Writing – original draft, Project administration, Investigation, Funding acquisition, Formal analysis, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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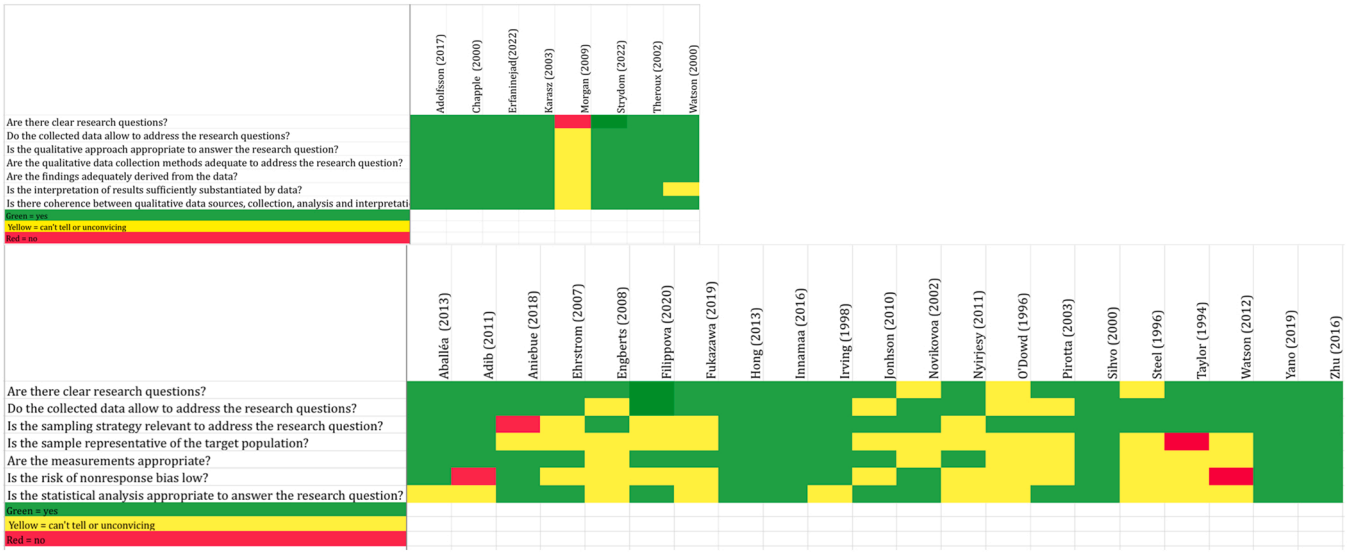
Appendix

A.1: Example of search

1. Candidiasis, Vulvovaginal OR Vulvovaginitis
2. (thrush OR "yeast infection*" OR candida* OR candidias* OR vaginitis) adj3 (chronic OR complicated OR complex OR "difficult to treat" OR endur* OR lasting OR "long standing" OR "long term" OR "multiple episodes" OR persist* OR recurr* OR relaps* OR resistan* OR return*)
3. (genital OR labia OR vagina* OR vulvovaginal OR vulva* OR woman OR women)
4. 2 AND 3
5. 1 OR 4
6. (account* OR attitude* OR barrier* OR challeng* OR diagnos* OR difficult* OR obstacle* OR facilitat* OR enable* OR experien* OR implement* OR manage* OR perception* OR perspective* OR treat* OR view*)
7. "Attitude of Health Personnel" OR "Attitude to Health"
8. (ethnograph* OR "focus group*" OR "framework analysis" OR "grounded theory" OR interview* OR narrative OR observation OR survey OR thematic OR qualitative OR quantitative OR questionnaire)
9. 6 OR 7
10. 5 AND 8 AND 9

B.1: MMAT quality appraisal



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