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An exploration of patient and family carers' views of dietary intervention for psychosis care and management

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ABSTRACT

Psychosis greatly impacts affected individuals and their families. Current pharmacological treatments are not fully efficacious and are associated with a range of metabolic side-effects. As a result, patients and their families seek alternative interventions, including managing their diet. Psychosis treatment guidelines recommend dietetic support as part of psychosis treatment, however this has not become embedded within routine practice. The aim of this study was to determine the views of patients and their families on the value of dietary intervention in their psychosis care and management. Study participants (n = 14) were either accessing psychosis treatment services (n = 8) or were familial carers (n = 6). Data were collected via individual semi-structured interviews and were thematically analysed resulting in four themes: 1) *'What constitutes a healthy diet?', 2) 'The connection between diet, the brain and symptoms', 3) 'Empowerment gained from finding my own self-management strategies'* and *4) 'How we envision dietary management for psychosis'*. Findings suggest participants would value having access to a diet intervention to aid their management of psychosis, delivered by knowledgeable health care practitioners within mental health services. Participants wanted the dietary intervention to be evidence-based, accessible and have outcomes which including improved dietary knowledge and skills. The principal recommendation following this research is to further develop a dietary intervention for psychosis care and management that is co-designed with health staff, people with psychosis and their familial carers, mental health service commissioners and academics responsible for educating health care practitioners' curricula.

1. Introduction

Psychosis is characterised by symptoms like delusional beliefs, auditory or visual hallucinations and anhedonia [1]. It has a relatively low prevalence worldwide: 0.027 % (95 % CI: 0.022 – 0.032) [2] yet is life-altering for the individuals that experience it and their families [3]. Psychosis care and management for individuals may be delivered in mental health inpatient settings or via community treatment allowing the individual to reside at home (NICE; Nice Guideline CG178; [4]). Treatment outcomes seem better when interventions are offered at the earliest opportunity [5].

In the U.K., a combination of pharmacological 'antipsychotic' treatment combined with psychosocial intervention (PSI) is deemed best practice (NICE Guideline CG178; [4]). Antipsychotic medicines are however linked with life reducing side-effects, including weight gain, dyslipidaemia and hyperglycaemia, predisposing to diabetes [6]. Recommended treatment strategies do not work for all individuals, with between 20 % and 60 % considered unlikely to respond to pharmacological treatment [7] with high discontinuations rates (56 %) cited [7]. Likewise, almost one case in every seven will not complete their full course of PSI [8]. The causes of treatment discontinuation include barriers to engagement caused by the impact of symptoms, co-morbid substance misuse, stigma, concerns over medication side-effects, and personal choice [9].

Dietary intervention in a health context relates to a person's diet, including the habits by which they consume foods. It is a key strategy to minimise the metabolic outcomes associated with psychotropic medication and is a modifiable risk factor in psychosis care and management [10]. Dietary nutrients are required for brain structure and function [11], which are known to be altered in those with psychosis [12].

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Nutrients, such as amino acids [13], fatty acids [14], vitamins and minerals [15] are required for optimal brain function in those experiencing psychosis. There is also evidence of an improvement in psychosis symptoms following supplementation with omega-3 fatty acids, amino acids, including serine, glycine, tryptophan and lysine and some B vitamins and zinc ([13]; Aucoin et al., 2020). Whole diet interventional studies have also been conducted: a 12-week dietary intervention providing food hampers, diet education and skills for people with serious mental illness demonstrated meaningful improvements in diet quality and health behaviours [16]. Likewise, a dietary assessment and dietary knowledge intervention for those aged 15 – 25 experiencing psychosis also demonstrated a 47 % reduction in discretionary food intake (−94 g/d, $P < 0{\cdot}001$) and reduced mean daily intakes of energy (−24 %, $P < 0{\cdot}001$) and sodium (−26 %, $P < 0{\cdot}001$) [17].

When asked about treatment preferences, those experiencing psychosis ask for alternatives, such as dietary intervention [18]. One step to improve engagement in treatment and improve outcomes for psychosis is co-production between professionals, patients and familial carers [19]. Health professionals positively regard diet and alternative therapies for psychosis care and management, although some report limited knowledge [20]. The NHS Constitution for England advocates that patients should have access to nutritious food to sustain good health and wellbeing [21]. England's Department of Health published guidance advocating a role for dietitians to support mental health patients [22]. An independent, cross-parliamentary forum report investigating the links between diet and behaviour also advocated dietary intervention as part of the NHS treatment of all individuals experiencing depression or psychosis [23]. Australian guidelines advocate a role for omega-3 fatty acids in preventing psychosis [24]. Although dietary intervention has been advocated in health policy for almost two decades, an evidence-based dietary intervention is not offered as part of routine care for psychosis. This study addressed the knowledge gap surrounding the views of patients and familiar carers on the role of diet for psychosis care and management. This is an important step to understand the key contextual factors that will be important for the successful development and future implementation of a dietary intervention for this population [25].

2. Methods

2.1. Study design

This qualitative study was founded in Pragmatism and used an inductive approach. Pragmatism provides a flexible and outcome-oriented approach that prioritises practical solutions over strict adherence to a single methodology (Creswell & Plano Clark, 2018). Pragmatism is a research paradigm that allows for the integration of both quantitative and qualitative approaches within data collection to ensure multiple perspectives appropriately when answering a research question (Creswell & Plano Clark, 2018). Through focusing on “what works” and adapting methodological choices to this study's objectives, pragmatism ensured that findings are both relevant and actionable (Morgan, 2014; Saunders, Lewis, & Thornhill, 2019). The inductive approach taken was one where the researchers aimed to generate theory and meaning from the data, as opposed to applying an existing framework [26]. It is important that the views of these patients and familial carers guide the future development of a dietary intervention and thus the study is aligned to the Medical Research Council's (MRC) framework for the development of complex interventions within healthcare [25]. They advocate that the views of patients and their families are integral to the development of a healthcare intervention. For the purposes of this study, the patients and familiar carers are viewed as one stakeholder group through a shared experience of the same dietary intervention for patients, albeit from different perspectives. The involvement of familial carers is critical, particularly for interventions at home in the community because they often buy, prepare and store all the food and meals consumed by patients. The study used a semi-structured interview design to collect data. The study findings are reported in line with the COREQ checklist [54].

2.2. Researcher positionality

The positionality of researchers, including their previous experience, knowledge and biases is an important factor influencing data collection and analysis [27]. All three researchers were outsider researchers because they did not have lived experience of serious mental illness symptoms. Their experience relates to providing care and treatment as health professionals, with one researcher (KW) having experience of providing dietary intervention for those experiencing psychosis as a registered nutritionist and the remaining two researchers (JB, NC) providing a range of health and care interventions as registered mental health nurses. Two of the researchers are predominantly pragmatic, mixed-methods researchers (JB, KW) and one is predominantly a qualitative researcher (NC). The researcher responsible for data collection (KW) believed that dietary intervention is an important part of the care and management of psychosis. JB and NC are unsure of the value of dietary intervention but are open to the concept.

2.3. Study setting

The study sample was drawn from within the psychosis treatment services of an NHS Trust in the North of England and comprised patients receiving psychosis treatment and family members of patients receiving psychosis treatment. The NHS Trust treats individuals in both community and inpatient settings across two counties in England. The Trust provides treatment to urban and rural populations, officially defined in England as populations in towns or cities greater than 10,000 individuals, whereas rural populations are defined as villages and hamlets comprising less than 10,000 individuals (Department for Environment, Food and Rural Affairs (DEFRA), 2025). The Trust does not provide treatment to populations defined in England as major conurbations, which are cities with greater than 200,000 residents (DEFRA, 2025).

2.4. Ethical consideration

The study was sponsored by The University of Leeds. Favourable opinion was received from the The National Research Ethics Committee and the Health Research Authority (HRA) (IRAS: 265219), permission to conduct the study was granted from the NHS Trust.

2.5. Patient and public involvement (PPI)

All study documents, including the protocol, participant information sheet and interview topic guide were reviewed by two individuals with lived experience in receipt of psychosis care from the NHS Trust prior to ethical review. As a result, it was made clear within documents that a dietary intervention would be an additional part of treatment and would not replace current treatment regimens.

2.6. Recruitment

Study participants were purposively recruited by (KW) via clinicians within the Trust's psychosis treatment teams who approached suitable individuals regarding the study. Those who expressed an interest were given copies of the participant information and asked for consent to contact. They were then contacted by (KW), and a date and time agreed to meet and discuss the study, including the researchers' goals for conducting it, answer questions and provide informed consent. Eligibility to take part in the study was determined through screening against the inclusion and exclusion criteria listed in Table 1.

Table 1
Inclusion and Exclusion criteria for potential study participants.

Inclusion	Exclusion
Be aged 18 years of age or over at the time of participation	Be aged 17 years and under at the time of study participation
Have previous or current experience of either i) receiving treatment from NHS Trust services for the symptoms of psychosis ('patient'), or ii) providing informal unpaid care for someone who has been treated for the symptoms of psychosis by the NHS Trust ('familial carer')	Have experience of receipt of treatment or the provision of informal unpaid care prior to 3 years at the time of study participation
Considered by the researcher to have the capacity to provide informed consent* to participate in the study at the time of data collection	Be considered, by the researcher, as lacking the capacity to provide informed consent to participate at the time of data collection
Have sufficient command of the English language to read and understand the consent form to provide informed consent to participate in the study.	Have insufficient command of the English language to read and understand the consent form to provide informed consent to participate in the study

2.7. Data collection

No participants were known to research team prior to data collection. Interviews were completed by a male Registered Nutritionist with previous experience providing dietary intervention within psychosis care and management services (KW). This was made clear to participants prior to them providing consent to participate. The study's data collection strategy was agreed with the two other researchers (one male and one female), both registered mental health nurses (JB and NC). Individual, semi-structured interviews were chosen as the method that would provide participants' freedom in what they discuss whilst allowing the researcher to guide the discussion in a way that answers the research question (Adams, 2015). The target sample was discussed and agreed by the researchers during study development leading to an agreed target of 12–20 participants, based on the principles of information power [28]. Data sufficiency was achieved following an initial review and discussion between all authors of the first 12 transcripts in terms of data quality. A decision was made to collect more data through recruiting a further two participants and then review data quality thereafter. It seemed clear from the review of the 14 transcripts that seeking further participants would not increase data quality and therefore data sufficiency was considered to have been achieved. An interview topic guide was developed, refined and agreed by all researchers and those with lived experience, following a review of the literature. Interviews were audio-recorded and transcribed verbatim by KW. Data collection was carried out face-to-face in either an NHS premises or at the participant's home between January 17, 2020 and October 16, 2020 with only one researcher (KW) and one participant present.

2.8. Analysis

Following data transcription, Braun and Clarke's [26] six step reflexive thematic analysis was conducted on all transcripts in date order, irrespective of whether they were patient or familiar carer participants. This was led by KW and managed through a combination of NVivo software (Version 12; QSR International Pty Ltd.) and Microsoft Excel. All researchers became familiar with each transcript prior to data coding (step 1) and helped with the coding and identification of categories and subsequent theme generation (steps 2). Themes were generated from across the data iteratively using a coding tree and mind maps, which allowed the diagrammatic representation of groups of codes and helped the researchers construct the themes. Data reporting (step 6) identified study participants as a patient or familial carer, and all direct quotations were presented using a pseudonym.

2.9. Enhancing trustworthiness

Throughout the development and delivery of the research study a reflexive journal was maintained, alongside an audit trail throughout the cyclical process required to generate themes [53]. These allowed transparency of the processes involved and enhanced the trustworthiness of the data collected. All researchers reviewed codes, categories and themes independently through shared versions of the coding tree (created using Microsoft Excel) at each step of the process. They then met together to discuss these until a coherent thematic structure was achieved that included all relevant data and supporting quotes from participants.

3. Results

3.1. Sample characteristics

A total of 14 participants were recruited, interviewed and included in the data analysis, comprising eight patients and six familial carers. None declined to participate or withdrew their consent. Patient participants were diagnosed with a psychotic disorder and were receiving treatment, in line with NICE guidelines for the treatment of psychosis (NICE Guideline CG178; [4]). Carer participants were either a parent or spouse of a patient receiving treatment for a diagnosed psychotic disorder and co-habited with that patient. All study participants were either interviewed in their own homes or at a community venue. Interviews lasted between 8 and 45 min, with total data collected equalling 3 h and 47 min.

3.2. Themes

Following thematic analysis, four themes were identified: (1) 'What constitutes a healthy diet?'; (2) 'The connection between diet, the brain and symptoms'; (3) 'Empowerment through finding my own self-management strategies' and (4) 'How we envision dietary management for psychosis'.

3.2.1. Theme 1: What constitutes a healthy diet?

Participants were generally happy to voice a view on what they believed constituted a healthy diet. It seemed apparent though that the majority seemed to convey only a basic of surface level awareness of the topic, such as the importance of *"getting your vegetables and … vitamins"* (Lisa, Patient), or *"oily fish … hearing it through television campaigns, is good for the brain*" (Ruby, Carer). Likewise, using words like "*variety*" (Lisa, Patient), "*balance*" and "*moderation*" (John, Carer) when describing specific foods. It is also pertinent to note that it remains unclear to what extent participants would connect the concept of 'health' with mental health and wellbeing. Particularly, if their knowledge is rooted in generic public health (television) campaigns, aimed at improving physical health issues, such as heart disease and obesity.

> *"We normally talk about other things, sort of, you know, like diabetes and that kind of thing as being linked to your sort of eating habits or exercise and that, but I've never actually come across or thought about it in terms of mental health … I don't know if I've ever connected it as such to, you know, that's impacting on, you know, to help your mental health."* (Jack, Carer)

In contrast then to the concept that participants' knowledge may have resulted, either directly or indirectly from media campaigns, the media was cited by some participants as a source of annoyance in relation to a healthy diet (Julie, Carer). Annoyance stems from issues including that claims advertised through the media can be confusing and misleading in terms of what is healthy and what isn't and from the issue that the media and supermarkets use advertising to exploit their preference of unhealthy foods over healthier foods.

"And whenever I'm in the supermarket, there's always an offer on if you buy two bags of crisps … one bag of crisps, you can get another four free or something, rather than fruit and vegetables being the healthier option. And the free … buy one, get one free, I never see that for them, it's always the biscuits and crisps isn't it, seem to be on offer." (Ruby, Carer)

Two participants believed the media distorted what constituted a healthy diet, and there was currently insufficient regulation of unhealthy food and food supplement advertisements.

Participants' ideals around a healthy diet included eating food with known provenance. This was food deemed higher in nutritional content, as opposed to processed food, which they deemed poorer in quality and perceived health value. Good quality food was important to health and was "*worth spending additional cash on*" (Jo, Carer) and could be sourced locally.

"You know, prioritising … sticking with your local butcher or … fish supplier, which I know our household does.… because that's worth spending additional cash on. Yes, you could get this cheaper somewhere else, but we prefer to have quality food … And that's been again, particularly underscored through COVID." (Jo, Carer)

It was also better to make meals *"from scratch"* so that you *"know exactly what's in them"* (Chris, Patient). There was a belief too that high quality food was *"more than just a source of energy"* (Ruby, Carer).

There were mixed views from all participants on whether a healthy diet included dietary supplements like omega-3 fatty acids or vitamins. They were described as convenient and "*fish oil supplements"* were thought to be especially beneficial to brain health (Ruby, Carer). Whilst some participants talked about the importance of dietary supplements in preventing or correcting nutritional deficiencies, others felt strongly that they should not, and *could not replace food*" (Jo, Carer) as the best source of nutrients

"I've read Ben Hardacre's [Goldacre] Bad Science, and it did make me smile 'cause he's quite scathing on some nutritional supplements, and says actually just eat good food, and there may be something in that … I think there is a point if you eat a good diet, and a balanced diet, then there's no need for supplements." (Ruby, Carer)

The data also suggested that the nutrients provided via supplements are sub-standard to those acquired from food in terms of their bioavailability. It was unclear though from the data whether participants viewed diet supplements as ameliorative for physical health, mental health or both.

3.2.2. Theme 2: The connection between diet, the brain and symptoms

Some, but not all participants articulated their belief that a person's diet, their brain and their experience of psychosis symptoms were interlinked. The data indicates a bi-directional relationship between diet, the brain and symptoms, where food consumed can impact on the brain and on symptoms and the impact of symptoms can impact on an individual's diet. There was a belief around foods which had a known impact, some positive and some negative, but that factors such as taste, feelings of comfort or even addiction impacted on the consumption of these. Likewise, participants displayed insight when acknowledging a link between symptoms and the inability to prepare a meal, and that they are aware that this is far from ideal.

There was dissonance in the views of participants regarding whether there was a link between diet, the brain and symptoms. Some participants viewed the brain as an organ with a physiological need for nourishment in the same way as the rest of the body (Ruby, Carer), and some relayed that they didn't think diet would help mental health, but were willing to know more (George, Patient; Tina, Patient). Others, however stated that they didn't know (Jack, Carer; John, Carer) or that they had limited knowledge, but seemed unsure of the value of that knowledge.

"I know drinking water is supposed to be really beneficial for mental health, isn't it. Oh, I don't know really. Maybe it helps the brain, I don't know." (Alice, Patient)

The link was also made by participants of the relationship between food consumption and how they felt and that consuming healthy foods can leave you feeling better.

"I believe that what you eat really affects your body and your mind. Yeah, I do, yeah. If you're lacking in some vitamins or anything like that, or anything, then your body's not really getting everything it needs … I know I definitely … when I eat well, I know … when I eat the right foods, I can definitely feel the benefit of it … Sometimes I think you can just feel what your body needs, when you need something." (Lisa, Patient)

There were also examples from the data whereby consuming unhealthy foods leaves people feeling *"rubbish"* (Margaret, Carer) also certain nutrients or foods Needs *"[caffeine, fat and sugar] don't do you any good"* (Lisa, Patient) Eating unhealthy foods led people to experience an unhelpful cycle of low mood or feeling *"down in the dumps"* (George, Patient) leading to further consumption of unhealthy foods, which then further exacerbated their low mood. This parallels with another cycle described in the data: the lack of motivation associated with psychosis, which led individuals to order takeaway and processed, unhealthy foods. Hearing voices, being paranoid or obsessive thoughts were perceived as distracting, to the point that some days people simply forgot to eat, or experienced diminished cognitive processes required to eat and drink. Yet, on other days people described being able to prepare *"a decent meal"* (Lisa, Patient).

"I remember [my family member] was really, really delusional and paranoid and it was really hard to get him to drink any water because he thought there was something in it." (Julie, Carer)

Some participants shared insight that they would choose certain foods, like *"chocolate"* (John, Carer), *"sugary cakes"* (Lisa, Patient) even though they knew they were unhealthy because "w*hen people are sad or stressed, they comfort eat"* (John, Carer). Irrespective of the perceived negative impact of these foods on their health, participants stated that they consumed them either because simply they enjoyed the taste or because of perceived addictive properties (John, Carer).

"Energy drinks I think have a real impact on mental state and physical symptoms as well, like, you know, anxiety, like pulse racing and things like that … I don't drink them myself but a family member has. And he's got an addictive personality anyway and he swapped it from alcohol to energy drinks because he thought that was healthier. I then looked into side effects of drinking too many energy drinks and they're just unreal, just really unhealthy." (Julie, Carer)

Negative psychosis symptoms presenting as a lack of motivation was perceived as inhibiting a patient's ability to prepare meals, leading to a cycle of ordering and eating unhealthy takeaway or processed foods.

"yeah, so … well it's his illness … I'm sure he would engage with people a bit better than he does, but at the minute he seems to … can't see why anybody's bothered, or why he should be bothered, or we're not bothered really, so it's all very negative. It's not as easy [to stay motivated to cook] if you're not cooking for other people, and that kind of thing. Not that they don't want to either, they just can't make that effort really." (Ruby, Carer).

The positive psychosis symptoms, such as hearing voices were also viewed as being so distracting that on some days patients simply forgot to eat, although on other days they can prepare a decent meal (Lisa, Patient). Paranoia, another positive symptom of psychosis, was viewed as directly affecting dietary behaviour, due to the diminished capacity to undertake basic thought processes around the need to eat and drink.

"People with psychosis might be paranoid about food and what they're eating as well which could have an impact on their diet … I remember [my

family member] was really, really delusional and paranoid and it was really hard to get her to drink any water because she thought there was something in it." (Julie, Carer)

These participants have clearly indicated that the ability or inability to do diet-related tasks, such as meal planning and preparation was directly linked to a person's psychosis at a given point in time. The perceived stigma associated with the metabolic consequences of antipsychotic medication also led to a cycle of apathy around eating healthy food *"people think you're lazy don't they, whether you are or you're not"* (Ruby, Carer), providing them little motivation to change. Others stated that they didn't know if there was a link between diet, brain health and psychosis, but wanted to know more.

3.2.3. Theme 3: Empowerment through finding my own self-management strategies

Participants relayed a sense of empowerment from finding and making their own recipes and through growing their own vegetables or following diet supplementation regimes to avoid nutrient deficiencies. Supplements included fish oils, vitamin B, and a composite vitamin and mineral supplements. Some participants had been prompted to try diet supplements to improve their health due to the adverse effects they had experienced from antipsychotic medication.

Examples of strategies used by participants to improve their diet were practically focussed and based on quite small changes to their behaviour. Changes included replacing processed foods with more whole foods and altered cooking practices to increase the proportion of vegetables consumed (Cheryl, Patient). Other examples of empowerment are less generic and demonstrate a desire to improve symptoms associated with psychosis, such as agitation and sleep. Strategies included reducing coffee intake, or replacing caffeinated coffee with decaffeinated.

"I love coffee and I'm a big coffee drinker. I've recently switched to decaf for evenings and stuff and I find that maybe that's helping me sleep better as well. Caffeine is not as high in the evening, therefore I'm happier to go to sleep, I'm not as agitated, I'm not as fidgety." (Lisa, Patient)

Two of the participants shared the empowerment they had experienced as a result of growing some of their own food, like herbs (Jo, Carer) and the pleasure they felt at being able to provide food for friends and family. Ruby said that she has an allotment, which allows her to eat seasonally and spend time with her family.

"So, yes, we both are keen gardeners and work on the allotment together, so the food that we crop we eat. I know I have a mini smile that literally I can have something growing, cooked and on my plate within an hour from cropping it really, and that does feel nice really. And definitely the taste, so when I've given odd vegetable to families, you know, so that, you know, there's a taste difference [compared with the supermarket]. Well actually it tastes of a carrot rather than just being orange." (Ruby, Carer)

Study participants understood thought that to change and experience the empowerment and feel pride, they needed to be ready to change their diet. Where dietary changes had been made by individuals, they experienced reduced anxiety and improved sleep, which *"was easy when you get into the mindset"* (Jack, Carer). Another participant reported pride at overcoming their own struggle with readiness to change.

"I tried, but I couldn't stick to it [healthier eating] at that time … I really focussed on it and was able to stick to it, but … because of COVID and my friend's problems it's gone downhill now." (Tina, Patient)

Not all participants relayed times when they had successfully adhered to their dietary change plans. One participant reported their struggles with readiness to change, highlighting times of success at improving their diet and a recent stressful event, which led to a setback.

"Yes, some workers from my mental health team they took me once, twice … I tried, but I couldn't stick to it at that time, but when I did my diet about two years ago, I really focussed on it and I was able to stick to it, but like I says because of COVID and my friend's problems it's gone downhill now." (Tina, Patient)

One participant said that knowledge doesn't always lead to actionable change.

"Well yes, knowing the answer and doing it is a different thing … Well I think it's easy to know what's good and what's not really, but the actual doing it is the difference. So knowing it and doing it are two different things. I don't always practice what I preach, but I do try to eat five a day. So I have little drives with myself where I do make a conscious effort to eat the five a day, and more if I can really. And then I go off grid really, and then don't, and then there's the fruit going off in the bowl that I have to clean up, or throw away really." (Ruby, Carer)

Participants also acknowledged that beneficial dietary strategies were empowering but weren't without effort and could be a source of frustration. Meals they perceived as 'healthy' took *"a lot of time and effort to prepare"* (Julie, Carer) or were costly *"if you haven't got any money and you are hungry, you need to fill your belly"* (Ruby, Carer) and required an initial *"purchase of many ingredients all at one time"* (John, Carer), which meant that it was costly and thus unrealistic.

3.2.4. Theme 4: How we envision dietary management for psychosis

All participants believed that people should be able to access diet support through mental health services to improve wellbeing and *"correct nutritional deficiencies"* (Alice, Patient) and prevent or ameliorate medication side effects, including weight gain and its consequent reduction in self-esteem and mood. There was a view that whilst diet support might be important, it wasn't a sole replacement to current treatment *"I don't think it'll completely get you off your medication."* (Margaret, Carer).

Participants viewed that dietary intervention should start with collecting objective data on the individual's current diet, through questionnaires for example, rather than making assumptions on what changes would be required. The intervention could then support people with practical suggestions of *"meal plans and ideas"* (Jack, Carer), to help *"avoid repetition … and provide variety to the diet"* (Dave, Patient). Participants considered that training sessions aimed at skills-acquisition, should be delivered in a *hands-on"* (Ruby, Carer), as opposed to theoretical way and would be a useful strategy to encourage engagement whilst also educating and upskilling patients. Particularly where activities are tailored to the individual. Furthermore, one participant stated the need for a relaxed atmosphere during practical sessions to support patients' knowledge acquisition and reduce their anxiety. This participant believed it would help sustain interest and aid participants' memory retention. The content of a dietary intervention should also be delivered with factors such as budgetary constraints and low motivation and skills being considered.

"Cheaper substitutes … I can understand them not wanting to put the oven on when they can boil pasta … There's nothing quicker, or simpler, I don't think, than an egg, fried, boiled or scrambled." (Ruby, Carer)

Views were expressed that dietary intervention for psychosis care and management should be initiated early in the psychosis journey. Dietary intervention delivery could start on the inpatient wards because people may retain what is said to them even if they aren't fully able to make changes. The hospital environment is also a helpful place because patients are keen to engage in activities.

"It's a long day. You've not got a lot to do … they don't see that many people, they're absolutely dying to be able to talk to someone and they'll take any information that they get." (Lisa, Patient)

Trust was important to participants. Having a trusted organisation, like the NHS delivering the dietary intervention was perceived as a marker of the 'quality' of the information. A linked point was that

participants wanted to be able to trust the practitioner or professional who delivered the intervention. The therapeutic relationship was seen as key for a patient to connect and successfully engage with a professional, which extended to diet. Participants suggested that building trust can take time and benefits from continuity in who delivers the intervention and underpins its success. A participant stated the need for several visits to really *"open up and trust"* someone (Lisa, Patient). Aligned to this, the data also highlighted patients and familial carers' frustration including when they misjudge whether someone is ready to make changes because it amplifies a *"feeling of failure"* (Ruby, Carer) at not being able to change. Dietary intervention should follow other psychosis treatment approaches where patients views are valued and included, otherwise there it the potential for patient disengagement.

> *"When I was first ill with psychosis … I used to see the psychiatrist and he was that busy, he used to send a locum or a student. So, every time all they were interested in, was … learning for their own experience and not really giving you any solutions as to how you might get better."* (Lisa, Patient)

Most participants stated that professionals located within mental health services were best placed to provide diet support for psychosis, perhaps via one identified staff member within a team. There was acknowledgement of the resourcing challenges that a model such as this may pose due to high workloads for staff. The data also suggested that specialist knowledge and skills would be required to deliver the intervention. The knowledge and skills referred to were both diet knowledge and an understanding of the impact on individuals of psychosis symptoms, such as the lack of motivation and issues with concentration.

> *"So perhaps if a CPN [Community Psychiatric Nurse], with specialist knowledge on nutrition could come … or a nutritionist that was a specialist in mental health."* (Ruby, Carer)

One participant suggested that patients may benefit from peer support and group interaction. Some believed that there may be a role for members of their family or care network to provide dietary intervention to reinforce messages at times when professionals aren't there and provide meal preparation support. Support from family and the care network could also boost an individual's motivation to eat well.

> *"I share … with two friends … now … one of them loves cooking, and she's quite conscious of health, and so … we eat quite healthy food."* (Lisa, Patient)

Participants talked about the essential need for services to be flexible in how and where they deliver a dietary intervention and multiple attempts may be required to engage people who are not yet ready to make dietary changes. Examples included tailoring the intervention to include delivery outside normal office hours and in people's homes. Home visits were described as non-intrusive, and a home environment provided opportunity for cooking facilities assessment to check and discuss types and brands of foods purchased. Benefits from the intervention were boosted through face-to-face interaction by enabling *"more connection"* (Lisa, Patient). Conversely, for some individuals, intervention accessibility would be improved through online delivery via a dedicated website or through smartphone applications ('Apps'). Some participants suggested online interaction with a dietitian with users logging their food intake, or swapping recipes and tips and with another participant cited "*bespoke*" personalisation of the intervention, to meet their individualised needs (Jo, Carer). One participant said they wanted the opportunity to chat to someone to check they had understood and retained the information. Not all participants could engage with technology though through lack of a computer or internet access.

4. Discussion

This study explored patients and familial carers' views on the role of diet for psychosis care and management. Many participants confidently relayed their knowledge of a "healthy diet", represented generic public health messaging, such as 'variety' 'balance' and 'moderation', not acquired from healthcare treatment, but through mass media television advertising campaigns, such as The Department of Health's 'Change for Life' campaign, launched in 2009 [29]. A systematic review examining the efficacy of mass media campaigns on health behaviours found little evidence these campaigns have demonstrable impact on dietary knowledge and consequent changes to dietary habits [30]. Those experiencing psychosis may therefore be lacking clear knowledge of how diet could specifically impact on their mental health and wellbeing.

The data also conveyed confusion and frustration with the media and supermarkets in how they negatively influence eating behaviours toward unhealthier options. This ties in with The Food Foundation report entitled 'The Broken Plate', which found that 32 % of advertising spend is on unhealthy foods, compared to only 1 % on fruit and vegetables [31]. It is interesting that participants held the ideal of diet as being represented by home-cooked, unrefined foods with known provenance. The published literature cites sub-optimal dietary choices by those experiencing psychosis when compared to the general population [32, 33], suggesting they may therefore struggle to achieve their ideal diet. It is noteworthy that some participants reported growing their own fruit and vegetables, which may be facilitated by living in a rural setting and thus not an option for those living in inner city areas. The discrepancy between the ideal and the reality may simply reflect the difficulty in changing and maintaining dietary behaviours and explain the data suggesting some participants were keen to seek diet supplementation. Diet supplement users' views and reasons for usage report cited that 82.3 % believed supplementation was important to their health but not connected to a specific health-related condition or goal, although 11.9 % reported taking supplements to improve their mental health [34]. Lentjes [35] stated that whilst U.K. supplementation use has increased in the last few decades it hasn't correlated with reduced malnutrition, because there is variable bioavailability of the active ingredients within supplements, which reduces their absorption within the body [36]. Furthermore, many who self-select to take supplements are adequately nourished individuals with health-related anxiety [35]. Data from some patients and familial carers viewed a clear role for supplementation, but as a means to correct nutritional deficiency and malnutrition as a part of dietary intervention. Other participants viewed that diet supplementation could not replace whole food consumed as part of the diet both in terms of nutritional value and as a source of pleasure.

As expected, participants noted that having psychosis adversely impacted on their concentration or the motivation required to cook and eat well. It was interesting that one carer suggested sugar-sweetened 'energy drinks' were consumed by their family member both due to their addictive properties and "*their addictive personality*". Sugar dependence and neurological changes like those seen with opiate drugs have been demonstrated by animal models [37]. This may concord with reports of people living with psychosis having significantly increased processed sugar [38], and caffeine consumption [39], compared to the general population. Food-related addiction theories may therefore be of relevance to dietary intervention for those with psychosis. The datum indicating that comfort eating alleviates stress and is associated with psychosis [40]. A survey investigating the link between emotions and eating patterns showed adults (n = 160) were more likely to eat snack or processed foods in response to negative emotions [52]. The relationship between food and the human experience is clear, because food has always been such a central part of daily life [41].

The sense of pride and empowerment from developing self-management strategies around diet was an interesting finding and parallels wider psychosis recovery theory. It suggests offering empowerment-oriented treatment for psychosis patients improves recovery (Lee et al., 2021). Pitt et al. [42] reported that those with lived experience would prefer access to peer recovery stories to help boost their own recovery. Family carers of people with psychosis often feel disempowered and family involvement is found to be beneficial to psychosis recovery [43]. Peer support may also present a solution for

those individuals who lack family support or who struggle to form a therapeutic relationship with some professionals. The therapeutic relationship between patients or carers and health professionals was deemed essential by participants in this study as effecting engagement, trust and subsequent behaviour change. Many of the changes noted by participants were small, practically focussed and achievable, such as switching caffeinated for decaffeinated beverages. Dietary support may represent an area where professionals can act as peers because they will have their own practically focussed stories, struggles and successes related to food. Appropriate self-disclosure positively influences the therapeutic relationship for practitioners in mental health services [51] as does consistency, where possible, in the professional who offers the support.

One participant (Tina, Patient) indicated that they weren't ready to access support when it was initially offered but could engage two years later when they were ready, indicating a role for behaviour change theory as part of dietary intervention for psychosis care and management. A 5-stage model of behaviour change suggests that: pre-contemplation, contemplation, preparation, action and maintenance are the steps individuals move through when changing behaviour [44]. A systematic review of published studies (n = 9) evaluated the effectiveness of dietary interventions based upon theoretical models of change, on whole dietary change in individuals [45]. The results of this review were mixed, with the authors highlighting the importance of well-designed interventions that were closely aligned to the change model [45]. Incorporating behaviour change theory could be realised through embedding an assessment of readiness to change within the intervention framework to understand in individual's stage of change and tailor support accordingly. Behaviour change theory could then be applied throughout the dietary intervention process.

There was rich data in the fourth theme that constituted elements of programme theory critical to the planning, development and implementation phases of the intervention [25]. Some key messages were around tailored and personalised approaches, which related to content and to method of delivery and the need for a strong and trusted therapeutic relationship between the patient and those delivering the intervention. Linked to this was that professionals may require specialist knowledge in diet and also should be knowledgeable and experienced around psychosis care. This suggests that diet and nutrition content should be added into the curricula for health professional students.

In a contrast to published literature on dietary habits, which suggests those with psychosis consume above-average levels of processed foods [46], the data in this study acknowledged that financial resources are limited, but participants maintain the ideal that they do not want to eat unhealthy food. There may be multiple explanations for this, one is that psychosis has long been linked to socioeconomic disadvantage through experiencing lower income and lower employment rates than age-matched peers, which spans cultural, social, and demographic contexts [47]. Another explanation is the relatively large increase in cost of living and cost of food over the last few years. An added burden is that many there are geographical and access issues for eating well, with many local shops primarily selling the more processed options [48]. Likewise, food insecurity is increasing and is of particular concern for this population [49], so although participants represent their ideal to eat well, the cost may be a prohibitive factor. Dietary intervention should provide cost-effective solutions to patients because The Food Foundation's 'The Broken Plate' report cites that the poorest quintile of U.K. households would need to spend 47 % of their disposable income on food to meet the Government's healthy diet criteria [31]. Likewise, the report cites that healthier foods are three times more expensive than unhealthier foods per unit of energy [31]. Accessibility needs, such as location, cost to attend and time of day were cited by participants as being key enablers of engagement for them in dietary intervention [31]. This accords with the movement towards community and neighbourhood healthcare treatment in countries like the United Kingdom [50]. These factors should therefore be considered and co-produced with patients and familial carers, and a range of professional stakeholders at the beginning of the process, during intervention design.

4.1. Strengths and limitations

A strength of this study is that it is one of the first to explore patients and perhaps the first to explore familial carers' views of the value of dietary intervention as a part of psychosis care and management. The findings, include that patients and familial carers would value dietary intervention that could be individually tailored and delivered by trusted professionals. These findings not only add to the knowledge base but will directly contribute to the development and successful implementation of dietary intervention as part of psychosis care and management. A limitation was the decision to restrict recruitment of participants to one NHS Trust, which balanced minor urban conurbations and rural populations, which may represent a limitation in that the views of those living in larger cities with over 200,000 residents may not be truly represented. This may be an issue because findings such as the opportunity to grow their own food may be limited for some individuals. Any further dietary intervention development would benefit from including individuals residing in a larger city. A further limitation of the study is the decision not to member check the transcripts for accuracy ahead of data analysis. There will be further opportunities for patient and familial carer involvement in the development and subsequent piloting of a dietary intervention, which limits any detrimental impact this may have had on the findings presented.

4.2. Relevance to practice

There is a need from patients and their families for dietary interventions to be developed and delivered as part of psychosis care and management. NHS-based mental health professionals were viewed as trusted professionals who could support patients and their families with dietary intervention. Dietary intervention should be evidence-based and accessibly delivered and is tailored to the needs and circumstances of the individual.

5. Conclusion

Those who experience psychosis and their families were supportive of a role for dietary intervention as part of psychosis care and management, which can empower individuals if they find a strategy that suits them. Dietary intervention must be tailored to individual needs and circumstances and must be built on a foundation of trust and a strong therapeutic relationship. This however relies on staff having requisite knowledge skills and resources to deliver the intervention.

CRediT authorship contribution statement

Kevin Williamson: Writing – original draft, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **John Baker:** Writing – original draft, Supervision, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Nicola Clibbens:** Writing – original draft, Supervision, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.nupsyc.2025.100005.

Data availability

Data will be made available on request.

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