It's like living with a ticking time bomb - A qualitative study about patients' and their families' experiences related to the recurrence of a high-grade glioma

1: Helle Sorensen von Essen, RN, Ph.D., ORCID ID: 0000-0003-3033-7598

2: Karina Dahl Steffensen, MD, Ph.D., Professor, ORCID ID: 0000-0002-9217-3907

3: Frantz Rom Poulsen, MD, Ph.D., Professor, ORCID ID: 0000-0001-5715-6901

4: Karin Piil, RN, Ph.D., Associate Professor, ORCID ID: 0000-0001-7972-4674

Department of Neurosurgery, Odense University Hospital, J.B. Winsloews Vej 4, DK-5000 Odense, Denmark (HSE, FRP)

Department of Clinical Research and BRIDGE (Brain Research Inter-Disciplinary Guided Research), University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark (HSE, FRP)

Center for Shared Decision Making, Region of Southern Denmark, Beriderbakken 4, DK-7100 Vejle, Denmark (KDS)

Department of Regional Health Research, Faculty of Health Sciences, University of Southern Denmark, J.B. Winsloews Vej 19, DK-5000 Odense, Denmark (KDS)

Department of Oncology, Centre for Cancer and Organ Diseases, Copenhagen University Hospital, Blegdamsvej 9, DK-2100 Copenhagen, Denmark (KP)

Department of People and Technology, Roskilde University, Universitetsvej 1, DK-4000 Roskilde, Denmark (KP)

Corresponding author:

Helle Sorensen von Essen, Department of Neurosurgery, Odense University Hospital, Kloevervaenget 47,
Indgang 44, 46, 1. sal, DK-5000 Odense C, Denmark. E-mail: Helle.sorensen.von.essen@rsyd.dk,
Telephone: +45 60628215

Abstract

Background:

High-grade gliomas (HGG) are the most aggressive and infiltrative sub-type of primary brain tumors. The average survival rate from diagnosis is less than two years, and all patients eventually experience a recurrence. However, our understanding of patients' and their families' experiences and coping mechanisms concerning the inevitable recurrence remains limited. This qualitative study explored how patients with HGG and their close family members experience and cope with their fear of recurrence and the diagnosis of HGG recurrence.

Methods:

Semi-structured individual interviews were conducted with patients with HGG and their family members. Following an inductive phenomenological hermeneutical approach, the interviews were coded, and the findings were divided into themes.

Results:

The study included 15 patients and 14 family members between the ages of 22 and 79. We identified three interrelated themes illustrating the complex experiences related to an HGG recurrence. Theme I, *Navigating the fear of recurrence*, describes experiences and coping mechanisms during the disease trajectory. Theme II, *Facing reality and preparing for death*, and Theme III, *Redefining hope in the era of recurrence*, illustrate experiences related to the recurrence diagnosis and redefinition of hopes for the future.

Conclusion:

Fear of recurrence is prominent in patients with HGG and their families, and the recurrence diagnosis triggers thoughts about death and the end-of-life phase. This new knowledge can be used to tailor support to patients and family members during the disease trajectory and personalize advance-care-planning consultations.

Keywords:

Fear of recurrence; Brain tumor; Patient experiences; Cancer recurrence; Advance care planning

Key points:

- Patients experience that the MRI scans are what determines whether they are ill or well
- The recurrence diagnosis is experienced as a shock
- The diagnosis of a high-grade glioma recurrence generates thoughts about the end of life

Importance of the study:

Patients with high-grade glioma and their families live with the awareness that despite aggressive primary treatment, the tumor will inevitably recur. This study provides new knowledge on how patients and their family members cope with fear of recurrence and the recurrence diagnosis.

Advance care planning is an important focus area within neuro-oncology, but there is an ongoing discussion on when to introduce advance care planning to patients with high-grade glioma. The results from the present study indicate that a high-grade glioma recurrence increases patients' and families' awareness about the patient approaching their end-of-life phase. This new knowledge can help inform and personalize advance-care-planning consultations and increase patient and family support.

Introduction

High-grade gliomas (HGG) are primary brain tumors characterized by their aggressive behavior, rapid growth, and a tendency to invade surrounding brain tissue.[1,2] Treatment typically involves a multimodal approach, including surgery, radiation therapy, and chemotherapy.[3-6] Achieving maximal safe resection is a favorable prognostic factor. However, even when all visible tumor masses are removed, the overall survival rate remains under two years. [1,7]

HGGs lead to a range of physical, cognitive, and emotional symptoms, significantly diminishing patients' quality of life.[8] Neurological deficits and cognitive impairments disrupt the patient's daily life, increasing patients' dependence on their families.[9] In parallel, caregivers face a growing burden, with families often experiencing stress and anxiety as they cope with the patient's deteriorating health..[9]

Studies based on other cancer populations have shown that fear of cancer recurrence is a significant concern among cancer patients, impacting their emotional well-being, quality of life, and survivorship experience.[10,11] Younger age, higher degree of uncertainty, an extensive symptom burden, and a short survival time have been shown to indicate increased levels of fear of recurrence in cancer patients.[10,11] These triggering factors are all evident in patients with HGG. A study by Loughan et al.[12] suggests that patients with primary brain tumors experience a higher degree of death anxiety compared to other advanced cancer populations because of the progressing disease, functional decline, and neurological impairments.[12] Additionally, previous studies have shown that the awareness of the possibility of cancer recurrence does not necessarily mitigate the emotional distress of fear, anger, and hopelessness when the recurrence is diagnosed.[13] In addition, findings suggest that cancer recurrence has a tremendous impact on the emotional well-being and daily life of both patients and their families.[14,15]

Despite aggressive treatment, tumor recurrence of an HGG is inevitable and will be encountered by all patients with HGG requiring supportive care and timely advanced care planning. However, though patients' experiences of cancer recurrence and fear of recurrence have been extensively studied in other cancer populations, knowledge about how brain tumor patients cope with their fear and anxiety related to recurrence is limited.[16] In a previous study exploring the decisional needs of patients with recurrent HGG and their family members,[17] we found that involvement, hope, and decision support from healthcare professionals were essential to patients and families during the decision making about treatment and care. With the present study, we aim to further increase the understanding of how patients with HGG and their family members experience and cope with tumor recurrence.

The objective of this qualitative study was to explore how patients with HGG and their close family members experience and cope with their fear of recurrence and the diagnosis of an HGG recurrence.

Materials and methods

Design

This qualitative interview study employed a phenomenological hermeneutical approach to explore the lived experiences of patients with recurrent HGG and their family members. It is a continuation of a previous study exploring the decisional needs of patients and families when making decisions about treatment and care concerning an HGG recurrence.[17]

The reporting of the study follows the Equator guideline "Standards for Reporting Qualitative Research (SRQR)" [18] (SRQR checklist in supplementary).

Participants

Eligible participants included adult patients with an MRI-confirmed tumor recurrence and their adult family members. Patients designated their close family members and provided consent for the family members' participation. An overall sample size of 20-30 participants was assessed to be sufficient based on considerations about information power in qualitative interview studies, as suggested by Malterud et al.,[19] including reflections on the study aim, sample specificity, theoretical background of the study, quality of interviews, and analysis approach.[19]

Patients with aphasia or cognitive challenges could be included if they could provide consent and communicate in coherent sentences. Occasional stuttering and search for words was accepted. The patient's ability to provide consent was assessed by a clinical nurse specialist and an experienced neurosurgeon. A neuropsychologist was consulted in questions of doubt. The exclusion criteria for both groups of participants were the inability to understand and communicate in Danish.

Recruitment and setting

Following a purposeful sampling strategy[20], potentially eligible patients and family members were consecutively recruited at the neuro-surgical outpatient clinics at two large university hospitals in Odense and Copenhagen, Denmark, between April 2019 and March 2020. Recruitment was performed during the patients' attendance at a neuro-surgical consultation concerning their recently identified tumor recurrence. Eligible participants were informed about the study by a clinical nurse specialist, and all provided informed and written consent for participation.

Data collection

To explore the patients' and family members' experiences related to the recurrence and their decisional needs (described in a previous paper[17]), semi-structured interviews were conducted with patients and family members individually. The interviews were guided by an interview guide[17] outlining four broad questions designed to allow the participants to narrate their experiences in their own words. The interview questions emphasized the patients’ and family members’ experiences of the recurrence, the decision making and their interactions with health care professionals. The full interview guide can be found in the supplementary of the original paper.[17]

The interviews were conducted by telephone within 2-5 weeks after the patients had been informed about the HGG recurrence. All interviews were performed by a clinical nurse specialist who was experienced in communicating with patients with HGG (HSE). Given the life-threatening situation and potential cognitive and communicative impairments of the patients, all interviews were conducted with careful consideration of each participant's individual needs. The interviewer exercised patience with stuttering, pauses, and the search for appropriate words.

All interviews were audio-recorded and transcribed verbatim. Interview and demographic data on the participants were managed and stored using REDCap electronic data capture tools and NVivo qualitative data analysis software hosted at OPEN (Open Patient Data Explorative Network, Odense University Hospital, Region of Southern Denmark).

Analysis

The analysis was performed using NVivo qualitative data analysis software (QSR International Pty Ltd, version 11.4, United Kingdom) to ensure transparency and methodological rigor in the analytical process.

In this secondary analysis, interview data from patients and family members were analyzed separately to facilitate data triangulation and identify essential themes relevant to the two participant groups. The analysis and interpretation followed a structured three-level approach inspired by the phenomenological hermeneutical philosopher Paul Ricoeur.[21,22]

The first level involved reading and re-reading the transcripts to obtain an initial understanding of what the text spoke about.[22] At level two, a structural analysis was conducted to validate or invalidate the initial understanding and explore the text's meaning.[22] The structural analysis involved coding sentences and paragraphs in the text and identifying units of meaning.[22] The meaning units were then further condensed into relevant themes and sub-themes.[22] The results from patient and family interviews were integrated to establish overall themes. At level three, we aspired to attain a comprehensive understanding[22] through critical reflection and discussion in the discussion section.

Quotes from participants were translated into English and presented in the result section to illustrate the analysis and increase the reliability of the identified themes.

To enhance the credibility of the findings, investigator triangulation was employed.[23] Two researchers (HSE, KP) independently performed a naïve reading of the transcripts, and the initial impressions were discussed. The coding process was conducted by HSE in close collaboration with KP. Subsequent thematic analysis and interpretation were conducted collaboratively by HSE and KP. Researcher pre-conceptions were openly discussed to mitigate potential biases in the interpretation process.

Ethics

Written informed consent was obtained from all participants. The study was conducted in accordance with the Helsinki Declaration[24] and registered by The Danish Data Protection Agency (19/177) and the Danish National Committee on Health Research Ethics (20182000-126).

Results

Sample characteristics

A total of 28 patients and 21 family members were assessed for inclusion. Among them, four patients were deemed ineligible due to aphasia or an inability to communicate in Danish. Two were excluded due to severe postoperative complications. Seven patients and seven family members opted out of participation, either due to emotional distress or because they did not respond to our contact attempts regarding the interview. Ultimately, 15 patients and 14 family members were included in the study (Table

1). The study involved 22 participants recruited from Odense University Hospital and seven from Copenhagen University Hospital.

The median age of the included participants was 56 years for patients and 54.5 years for family members. Most of the family members were spouses or partners to the patient. Two of the included patients experienced mild aphasia but were able to understand and communicate in sentences given sufficient time. All but one patient had a Karnofsky score above 80, indicating a high level of functional independence.

Insert Table 1. Participant characteristics

Naïve reading

Through the naïve reading, we attained an initial understanding of the lived experiences of patients and family members before and after the diagnosis of an HGG recurrence.

Patients: Patients described how they managed their fear of recurrence through conscious attempts to push their fears and grief into the background and instead focus on living a meaningful day-to-day life. Stable MRI scans showing no sign of tumor progression and the absence of symptoms were interpreted as the HGG being under control and the recurrence far away. When the recurrence occurred, it came as a shock, prompting intense thoughts and concerns about death.

Family members: The family members were constantly aware that they had to act strong, hold onto the positive, and support the patient, and possibly children, during the disease trajectory. They had actively pushed their grief and worries into the back of their minds. Though aware that the recurrence would someday occur, the actual recurrence diagnosis felt like a punch to the gut. The practical challenges of being a caregiver were exhausting, but the hardest part was feeling helpless. Redefining hope and making the most out of the time left with the patient was crucial.

Structural analysis

The structural analysis identified three overarching themes shared by patients and family members: Theme I: Navigating the fear of recurrence, Theme II: Facing reality and preparing for death, and Theme III: Redefining hope in the era of recurrence. The interconnected nature of the three themes is illustrated in Figure 1.

Insert Figure 1. Patients' and family members' experiences and coping with fear of recurrence and the high-grade glioma recurrence diagnosis

Theme I: Navigating the fear of recurrence

The awareness of HGG being a life-threatening disease challenged the lives of both patients and families. They knew that despite successful primary treatment, the tumor would inevitably recur and someday end the patient's life. Some described it as living with a ticking time bomb that they knew would detonate at some point, casting a shadow of uncertainty over their lives.

But this was a type of cancer that I'd most likely die from. Not die with, but die from. (Patient 07)

Because it's like a ticking time bomb, I know he's carrying it around in his head. (Family 13)

To navigate the uncertainty and live life to the fullest, patients and family members tried hard to push their fears and anxieties into the background of their consciousness. They explained that they could not live their lives fully if they had to think about the luring recurrence every day.

If I have to walk around being afraid that it might come back, maybe, possibly, or maybe not. I can't live like that. No. (Patient 12)

That's my way of dealing with things if you know what I mean. Like, "Well, it's fine for now. It's been operated on, and he's doing well enough to live with it, and it will be a long time before the next one comes. If it ever does." (Family 01)

The experience of multiple stable MRI scans indicating no progression or recurrence reassured patients and families that the disease was under control, fostering a sense of comfort and optimism. Some described it as being in a kind of "comfort bubble".

But every time I went for a scan and came back, I was always told there was no activity. And I was told that every time, except for that one time. So, I thought it was going so well. (Patient 20)

He's been fine since 2013 without being sick, you know. So, you get into this comfort bubble where you think everything is going well. (Family 11)

Patients described how the absence of disease-specific symptoms granted them a sense of well-being and health. Because they did not *feel* sick, the consciousness about the disease faded into the background, and they found that their state of health or illness was determined only by the MRI scans. The potential incongruence between how they felt and what the MRI scan told them was experienced as quite a paradox. In contrast, the experience of disease-specific symptoms awoke the worries about the life-threatening situation and increased the fear of recurrence.

It's hard when only a scan can show if you're sick or healthy, and you can't feel anything at all yourself. (Patient 08)

I could see that he had some weakness on the right side of his cheek. And I could tell from his words that he was starting to have trouble finding them. So, I had a bit of a feeling. (Family 13)

Theme II: Facing reality and preparing for death

Patients and family members expressed how the optimism and sense of security fostered by the absence of symptoms and previous stable MRI scans was a contributing factor to their feelings of chock when they suddenly faced the unexpected reality of a recurrence.

I haven't gotten dizzy or had headaches or anything at all. Nothing. That's also why it was such a shock. (Patient 07)

And then, we were told that the tumor had started to grow again. That was pretty tough to say the least. We hadn't expected it after so many scans had gone well. So that was that. (Family 03)

Some patients experienced a recurrence even during their primary treatment, and they described the confirmation of the recurrence as shocking. They were looking forward to fulfilling the treatment plan and being able to enter the next phase of their lives when they found themselves back to square one.

And we could somewhat see an end to it. I was starting to get better. I know one never truly becomes well again. But at least to the extent that one can. (Patient 16)

I mean, I have to say, it was quite a shock because we thought it was almost over, you know? (Family 16)

Though the feelings of suddenness and shock when the recurrence became a reality were shared by patients and family members, family members appeared to be better prepared for the inevitable diagnosis than the patients.

And then he calls me at five minutes to half past two. I'm at home, in our house. Alone. And he tells me that, unfortunately, there's something. It was a big shock for him, of course. It was also a shock for me, but definitely not as big a shock as it was for him. At every scan, I always prepare myself for the worst or something like that. (Family 17)

Following the initial shock of the recurrence diagnosis, patients and family members began to adjust to their altered reality. The recurrence highlighted the life-threatening nature of the disease and brought the poor prognosis to mind.

I had been told I might live for another 2 years. So, I thought, no, it can't be happening right now. But it did. But you're not happy to admit there is something because I kind of suppressed it. (Patient 18)

The recurrence was also experienced as bringing the patient one step closer to the end of life, leading patients to begin actively preparing for this phase.

It also affected me a lot because he started talking about how, well, maybe he wouldn't survive again. You know, buying farewell gifts for his child and things like that. And now you must remember [interrupts herself]. And he's made me a guardian and those kinds of things. So, it really hit home how things could go wrong. (Family 01)

The reiterated awareness about the end of life affected both patients and family members individually, inducing feelings of grief and worry. This awareness also impacted their interpersonal relationship, family dynamics, and priorities within the family. Family caregivers felt an urge to support and comfort the patient, recognizing that it might be their last opportunity to do so. Conversely, patients grappled with the heavy emotions of feeling like a burden to their loved ones.

And that's something I've come to realize that if I'm going to get through this and move forward, if [X] dies, which I'm starting to be a little afraid of, then I need to be able to say I did everything I could. I won't look back and say, "I wish I had done." (Family 15)

But there are so many factors at play when you become seriously ill. Oh. The worst part is that I feel like I'm a burden on my family because I can't really do much anymore. (Patient 18)

Theme III: Redefining hope in the era of recurrence

Living with an HGG and the knowledge that it will someday recur framed the experience of hope as an essential factor in the lives of both patients and family members. Though sometimes vague and not directed at anything specific, hope was highlighted as extremely important.

Because if you start feeling sorry for yourself, I don't think it helps. I really don't. (Family 16)

Hope for the best. There's almost nothing else you can do. (Family 03)

Even when the recurrence was a reality, and many patients and families experienced an increased awareness about the poor prognosis, some continued to cling to the diminishing hope of long-term survival.

I read online that there are 3-4 people who have had the same glioblastoma as me. Grade 4. And they're still alive. One has lived for 12 years, and one has lived for 15 years. And as I read.. Maybe I could be one of them? (Patient 15)

Although the hope of being one of the few long-term survivors might never completely fade, patients and family members tended to redefine their hopes and expectations when recurrence became a reality. They experienced a shift from focusing on distant goals to concentrating on short-term goals and being present in everyday life.

And then you learn to appreciate the present and be in the moment. All those little trivial things that used to annoy you before, there's just no time for that anymore. So, you move forward. We've really gained a whole new perspective on life. (Family 13)

But at the same time, it's like, "Oh, I shouldn't worry about their confirmations." Because she just turned 5, the oldest one. So, I won't be here for that, right? But then, maybe [short pause]. They're baptizing the youngest one in a month. I'll manage that, I guess. (Patient 01)

Patients and family members also described a change of focus from life quantity to life quality. They recognized that the patient's life was likely to be shorter than they had previously anticipated, and thus, ensuring the best possible quality of life became their top priority, regardless of its duration.

Well, we must admit that neither of us really holds onto the belief that we have a long life together ahead of us anymore. Now, the most important thing is, at least, that the time we have left is as positive as possible. (Family 15)

Discussion

To the best of our knowledge, this is the first study to explore the experiences of HGG recurrence from the perspectives of patients and family members. A key finding is that the awareness and fear of recurrence significantly impact their daily lives. Despite the constant awareness, the diagnosis of recurrence is frequently met with surprise and shock. Furthermore, the recurrence raises thoughts about death, leading some patients to actively prepare for the end of their lives.

Living with a life-threatening disease and the awareness of having a limited survival time are two of the main factors contributing to the experience of fear of recurrence.[10,11] One of the participants in the present study described it as "living with a ticking time bomb." Patients and their families know that the HGG will eventually continue to grow, but they do not know whether it will be tomorrow or several years from now. A recent review[11] reports a tendency towards a higher level of fear of recurrence among younger patients, patients with an expected survival time below 12 months, and patients with severe physical or psychological symptoms and emotional distress.[11] These traits more or less describe the typical HGG patient,[8,25] and the review findings[11] mirror the experiences of distress and fear of recurrence found in patients with HGG and family members in the present study.

The severity of the HGG diagnosis and the patients' cognitive deterioration[26] distinguish patients with HGG from patients with other cancer types. However, it appears that the fear of cancer recurrence and the feeling of shock upon diagnosis of recurrence reported by the participants in the present study are common experiences across various cancer populations.[10,11,13,15,27,28] In this context, Stewart et al.[28] conclude that the experience of recurrent cancer appears to be more affected by individual factors than by the specific cancer diagnosis.[28] In the present study, we found that the recurrence came as more of a shock to those who did not experience disease-specific symptoms, whereas those who did experience or observe symptoms were better prepared for the recurrence diagnosis.

To cope with the fear of recurrence and the general uncertainty related to the HGG trajectory, patients and family members described how they applied various coping strategies in their struggle to maintain quality, redefine hope, and find moments of happiness in their everyday lives. The most prominent strategy was trying not to think about the disease and future death but instead appreciating the day-to-day life. This positive reframing strategy was supported by an optimistic interpretation of stable MRI scans and the absence of disease-specific symptoms. On the other hand, deteriorations in the patient's health state increased the fear of recurrence and death. This oscillation between avoiding and confronting the life-threatening nature of the HGG disease shares significant similarities with the dual process model of coping with bereavement.[29] According to this model, coping with grief can be viewed as a dynamic process between loss-orientation, where the loss is confronted, and restoration-orientation, where focus is placed on coping with the changed reality.[29] Though the patients in this study were coping with fear rather than grief, we found that patients and family members applied both strategies in their coping with fear of recurrence and impending death. Healthcare professionals must understand these dual processes to tailor and provide timely and sufficient support to patients and families during the disease trajectory.

Even though the participants' use of coping mechanisms indicates an awareness of an inevitable recurrence, they often reacted with suddenness and shock when the recurrence was diagnosed, as if they were unprepared for it. This raises the question of whether this reaction stems from inaccurate prognostic awareness or from the effectiveness of their coping strategies. Previous studies show that patients with HGG often have an inaccurate understanding of the prognosis and may not fully grasp the incurability or fatality of their condition.[30-32] Conversely, family members tend to have a more accurate prognostic awareness. [30,32] With this in mind, the tendency of family members to seem better prepared and less shocked by the recurrence diagnosis than the patients could be grounded in differences in prognostic awareness.

However, when patients were asked to explain their reactions to the recurrence diagnosis, they highlighted reasons like having no symptoms and not feeling ill. The experience of physical well-being was interpreted as a sign of the tumor being inactive. This way of focusing on something positive instead of something negative, such as the inevitable recurrence, resembles the coping mechanism of positive reframing. In other cancer populations, positive reframing, acceptance, and active coping have been shown to increase the patients' mood and quality of life in cases where the patients had an accurate understanding of their incurable and life-limiting prognosis.[33] From this perspective, the participants' use of positive reframing and active coping to increase their well-being and meaning in their daily lives supports the argument that the participants' feelings of shock might be caused by efficient use of coping mechanisms rather than an inaccurate prognostic understanding. In some cases, the family members noticed physical or cognitive changes to the patient's health state before the patient did. This confrontation with the harsh reality allowed the family members to begin coping with the recurrence before it was formally diagnosed. Hence, the recurrence diagnosis was less surprising for the family than it was for the patient. In addition, the family members expressed an urge to support and comfort the patient, which might contribute to the family members striving to always be one step ahead regarding the anticipation of bad news.

Advance care planning is a critical focus within neuro-oncology[34,35], and there is an ongoing debate about the ideal timing for introducing it to patients and their families.[34,36] Introducing advance care planning too soon may overwhelm patients and families or make it difficult for them to engage in decision-making about an uncertain future. Conversely, introducing it too late may leave patients with HGG too cognitively impaired to participate effectively in decision-making.[37] In addition, the challenges of prognostic awareness further complicates the type and timing of advance care planning[30-32] The results from the present study suggest that an HGG recurrence increases patients' and families' awareness of the approaching end-of-life phase and a readiness to consider and prepare for end-of-life issues. At the same time, all study participants were still cognitively capable of participating in decision-making at this stage. These findings imply that the time of the recurrence diagnosis could be an optimal moment to introduce advance care planning while taking the prognostic awareness and cognitive abilities of the individual patient into account.

In addition to timely and personally tailored advance care planning, the results of the present study suggest that patients and their family members might benefit from professional support to cope with their fear of recurrence. Additionally, the increased awareness of death, changes in family dynamics, and redefinition of hope following the recurrence diagnosis might require emotional, psychological, and social support. These findings mirror the conclusions of previous studies exploring the supportive care needs of patients with HGG and their families.[38-40] A recent study underscores the importance of multidisciplinary support, including specialized neuro-oncology support, municipal support, social worker support, and mental health support.[39] This emphasizes the importance of individual needs assessments and a flexible approach to providing support throughout the healthcare system. As indicated by the present study, specific attention toward changes in the supportive care needs of patients and families at the time of the recurrence diagnosis is essential.

Methodological considerations

A strength of the present study was the inclusion of patients with cognitive and communicative impairments, which enhances the study's relevance to the actual patient population. Still, patients with severe aphasia and severe cognitive impairments were excluded, and the perspectives of these patients were merely included through the interviews with their family members. Fourteen eligible participants either did not respond to contact attempts or declined participation, primarily due to psychological distress. This indicates that the study might not capture the experiences of the most vulnerable patients and their families, limiting the transferability of the findings.

Tailored interview and communication techniques were employed in conjunction with data triangulation to enhance credibility. Additionally, investigator triangulation, attention to researcher pre-conceptions, and a transparent step-by-step analysis process strengthen the confirmability and dependability of the findings. The Equator guideline "Standards for Reporting Qualitative Research" has been followed to increase transparency and rigor throughout the study.

All included patients were eligible for further treatment at the time of their HGG recurrence, which may limit the transferability of the study findings to this subgroup of HGG patients.

The study was conducted within the Danish healthcare system, and its applicability to other cultural contexts might be restricted. This might be particularly evident for the information level and the prognostic awareness in the study participants as patient involvement and information is highly prioritized in the Danish healthcare system.

Conclusion

In this qualitative study, we explored how patients with high-grade gliomas (HGG) and their close family members experience and cope with the fear of recurrence and the recurrence diagnosis. Using an inductive phenomenological hermeneutical approach, we identified three overarching themes.

The first theme, navigating the fear of recurrence, describes how patients and family members managed the inevitability of the HGG's return and employed various coping strategies to handle their fears and worries. The second theme, facing reality and preparing for death, reveals that the recurrence was experienced as a shocking step closer to the end of life. The third theme, redefining hope in the era of recurrence, highlights how the awareness of patients and families shifted focus from long-term goals to short-term goals and generated thoughts about the end of life.

Based on these findings, it is crucial for patients and families that they receive support tailored to their specific needs concerning their fear and grief processes and readiness to consider end-of-life issues. Considering the redefining of hope and shift of focus following the recurrence diagnosis, this might be a beneficial time to initiate advance care planning discussions, as patients are often ready to engage in end-of-life planning. However, more research is needed to develop firm practice recommendations for providing existential support and advance care planning.

Required Statements

Funding

The DCCC Brain Tumor Center (WP18), Odense University Hospital (A3280), Region of Southern Denmark (18/51841), Novo Nordisk Foundation (NNF18OC0053140).

Conflict of interest

Helle Sorensen von Essen: Funding for the project received from: The DCCC Brain Tumor Center (WP18), Odense University Hospital (A3280), Region of Southern Denmark (18/51841), Novo Nordisk Foundation (NNF18OC0053140). Member of nurses/AHP committee of EANO.

Karina Dahl Steffensen: None declared.

Frantz Rom Poulsen: None declared.

Karin Piil: Associate editor of NOP. Grants or contracts from SERVIER, MEDScape. Chair of The Disparity Committee of EANO. Member of nurses/AHP Committee of EANO.

Authorship

Design, planning, and implementation of the study: HSE, KDS, FRP, KP

Recruitment and inclusion of participants: HSE

Analysis and interpretation: HSE, KP

Writing of manuscript: HSE, KDS, FRP, KP

Approval of the final version: HSE, KDS, FRP, KP

Acknowledgments

We thank the participating patients and family members for their time and openness and the neurosurgical outpatient clinics at Odense University Hospital and Copenhagen University Hospital for their collaboration during recruitment.

References

1. Ostrom QT, Cioffi G, Gittleman H, et al. CBTRUS Statistical Report: Primary Brain and Other Central Nervous System Tumors Diagnosed in the United States in 2012-2016. *Neuro-oncology*. 2019;21(Suppl 5):v1-v100.
2. Louis DN, Perry A, Reifenberger G, et al. The 2016 World Health Organization Classification of Tumors of the Central Nervous System: a summary. *Acta Neuropathol*. Jun 2016;131(6):803-820.
3. Weller M, van den Bent M, Preusser M, et al. EANO guidelines on the diagnosis and treatment of diffuse gliomas of adulthood. *Nature Reviews Clinical Oncology*. 2021/03/01 2021;18(3):170-186.
4. Weller M, van den Bent M, Hopkins K, et al. EANO guideline for the diagnosis and treatment of anaplastic gliomas and glioblastoma. *Lancet Oncol*. Aug 2014;15(9):e395-403.
5. Weller M, van den Bent M, Tonn JC, et al. European Association for Neuro-Oncology (EANO) guideline on the diagnosis and treatment of adult astrocytic and oligodendroglial gliomas. *Lancet Oncol*. Jun 2017;18(6):e315-e329.
6. Stupp R, Hegi ME, Mason WP, et al. Effects of radiotherapy with concomitant and adjuvant temozolomide versus radiotherapy alone on survival in glioblastoma in a randomised phase III study: 5-year analysis of the EORTC-NCIC trial. *Lancet Oncol*. May 2009;10(5):459-466.
7. Mladenovsk M, Valkov I, Ovcharov M, Vasilev N, Duhlenski I. High Grade Glioma Surgery - Clinical Aspects and Prognosis. *Folia Med (Plovdiv)*. Feb 28 2021;63(1):35-41.
8. Dirven L, Aaronson NK, Heimans JJ, Taphoorn MJ. Health-related quality of life in high-grade glioma patients. *Chin J Cancer*. Jan 2014;33(1):40-45.
9. Sterckx W, Coolbrandt A, Dierckx de Casterlé B, et al. The impact of a high-grade glioma on everyday life: A systematic review from the patient's and caregiver's perspective. *European Journal of Oncology Nursing*. 2013;17(1):107-117.
10. Simard S, Thewes B, Humphris G, et al. Fear of cancer recurrence in adult cancer survivors: a systematic review of quantitative studies. *J Cancer Surviv*. Sep 2013;7(3):300-322.

11. Calderon C, Gustems M, Galán-Moral R, Muñoz-Sánchez MM, Ostios-García L, Jiménez-Fonseca P. Fear of Recurrence in Advanced Cancer Patients: Sociodemographic, Clinical, and Psychological Correlates. *Cancers (Basel).* Feb 23 2024;16(5).

12. Loughan AR, Husain M, Ravyts SG, et al. Death anxiety in patients with primary brain tumor: Measurement, prevalence, and determinants. *Palliat Support Care.* Dec 2021;19(6):672-680.

13. Wanat M, Boulton M, Watson E. Patients' experience with cancer recurrence: a meta-ethnography. *Psychooncology.* Mar 2016;25(3):242-252.

14. Vivar CG, Canga N, Canga AD, Arantzamendi M. The psychosocial impact of recurrence on cancer survivors and family members: a narrative review. *Journal of Advanced Nursing.* 2009;65(4):724-736.

15. Mahon SM, Casperson DM. Exploring the psychosocial meaning of recurrent cancer: a descriptive study. *Cancer Nurs.* Jun 1997;20(3):178-186.

16. Loughan AR, Lanoye A, Aslanzadeh FJ, et al. Fear of Cancer Recurrence and Death Anxiety: Unaddressed Concerns for Adult Neuro-oncology Patients. *Journal of Clinical Psychology in Medical Settings.* March 2021;28(1):16-30.

17. Sorensen von Essen H, Stacey D, Dahl Steffensen K, Guldager R, Rom Poulsen F, Piil K. Decisional needs of patients with recurrent high-grade glioma and their families. *Neurooncol Pract.* Oct 2022;9(5):402-410.

18. O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for Reporting Qualitative Research: A Synthesis of Recommendations. *Academic Medicine.* 2014;89(9):1245-1251.

19. Malterud K, Siersma VD, Guassora AD. Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qual Health Res.* Nov 2016;26(13):1753-1760.

20. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm Policy Ment Health.* Sep 2015;42(5):533-544.

21. Ricoeur P. *Interpretation Theory: Discourse and the Surplus of Meaning.* Fort Worth, Texas: The Texas Christian University Press; 1976.

22. Lindseth A, Norberg A. A phenomenological hermeneutical method for researching lived experience. *Scand J Caring Sci.* Jun 2004;18(2):145-153.

23. Lincoln YS. *Naturalistic inquiry / Yvonna S. Lincoln, Egon G. Guba.* Beverly Hills, Calif: Sage Publications; 1985.

24. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *J Am Coll Dent.* Summer 2014;81(3):14-18.

25. Piil K, Laegaard Skovhus S, Tolver A, Jarden M. Neuro-Oncological Symptoms: A Longitudinal Quantitative Study of Family Function, Perceived Support, and Caregiver Burden. *J Fam Nurs.* Jul 21 2021:10748407211029986.

26. Sinha R, Stephenson JM, Price SJ. A systematic review of cognitive function in patients with glioblastoma undergoing surgery. *Neurooncol Pract.* Mar 2020;7(2):131-142.

27. Vivar CG, Whyte DA, Mcqueen A. 'Again': the impact of recurrence on survivors of cancer and family members. *Journal of Clinical Nursing.* 2010;19(13-14):2048-2056.

28. Stewart RJ, Humphris GM, Donaldson J, Cruickshank S. Does Cancer Type Influence the Impact of Recurrence? A Review of the Experience of Patients With Breast or Prostate Cancer Recurrence. *Front Psychol.* 2021;12:635660.

29. Stroebe M, Schut H. The dual process model of coping with bereavement: rationale and description. *Death Stud.* Apr-May 1999;23(3):197-224.

30. Diamond EL, Corner GW, De Rosa A, Breitbart W, Applebaum AJ. Prognostic awareness and communication of prognostic information in malignant glioma: a systematic review. *Journal of neuro-oncology.* 2014;119(2):227-234.

31. Walsh LE, Polacek LC, Panageas K, et al. Coping with glioblastoma: prognostic communication and prognostic understanding among patients with recurrent glioblastoma, caregivers, and oncologists. *J Neurooncol.* May 2022;158(1):69-79.

32. Forst DA, Quain K, Landay SL, et al. Perceptions of prognosis and goal of treatment in patients with malignant gliomas and their caregivers. *Neurooncol Pract.* Oct 2020;7(5):490-497.

33. Nipp RD, Greer JA, El-Jawahri A, et al. Coping and Prognostic Awareness in Patients With Advanced Cancer. *J Clin Oncol.* Aug 1 2017;35(22):2551-2557.

34. Fritz L, Dirven L, Reijneveld JC, et al. Advance Care Planning in Glioblastoma Patients. *Cancers (Basel).* Nov 8 2016;8(11).

35. Wu A, Ruiz Colón G, Aslakson R, Pollom E, Patel CB. Palliative Care Service Utilization and Advance Care Planning for Adult Glioblastoma Patients: A Systematic Review. *Cancers.* 2021;13(12):2867.

36. Pfeil TA, Laryionava K, Reiter-Theil S, Hiddemann W, Winkler EC. What keeps oncologists from addressing palliative care early on with incurable cancer patients? An active stance seems key. *The oncologist.* Jan 2015;20(1):56-61.

37. Hewins W, Zienius K, Rogers JL, Kerrigan S, Bernstein M, Grant R. The Effects of Brain Tumours upon Medical Decision-Making Capacity. *Curr Oncol Rep.* May 2 2019;21(6):55.

38. Piil K, Jakobsen J, Christensen KB, et al. Needs and preferences among patients with high-grade glioma and their caregivers – A longitudinal mixed methods study. *European Journal of Cancer Care.* 2018;27(2).

39. Ståhl P, Henoch I, Rydenhag B, Smits A, Ozanne A. Living with glioblastoma - the need for integrated support based on experiences of chaos, loss of autonomy, and isolation in both patients and their relatives. *Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer.* Aug 21 2024;32(9):599.

40. Pace A, Dirven L, Koekkoek JAF, et al. European Association for Neuro-Oncology (EANO) guidelines for palliative care in adults with glioma. *Lancet Oncol.* Jun 2017;18(6):e330-e340.

Captions

Table 1: Participant characteristics

Figure 1: Patients' and family members' experiences and coping with fear of recurrence and the high-grade glioma recurrence diagnosis

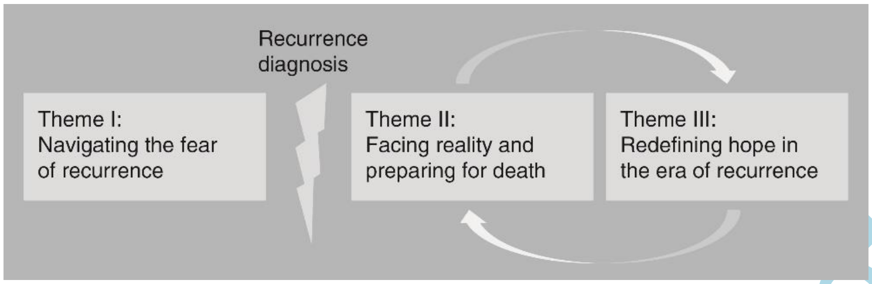
Table 1: Participant characteristics

Participants (n=29)	Patients (n=15)	Family members (n=14)
Male	9	4
Female	6	10
Age		
<40	-	2
40–59	10	6
60–79	5	6
Median age (range)	56.0 (40–72)	54.5 (22–79)
Diagnosis		
Glioblastoma grade IV	10	
Anaplastic astrocytoma grade III	2	
Anaplastic oligodendroglioma grade III	3	
Karnofsky score		
60–70	1	
80–100	14	
Family members' relation to the patient		
Partner		11
Child or sibling		3
Highest education past primary school		
<4 years	8	6
4–7	5	7
≥7	2	1
Family status		
Living alone	4	1

Living with a partner	11	13
Having children		
None	2	2
0–17 years	4	4
18+ years	9	8

Table adapted from Sorensen von Essen et al. [17]

Figure 1



Recurrence diagnosis

Theme I:
Navigating the fear of recurrence

Theme II:
Facing reality and preparing for death

Theme III:
Redefining hope in the era of recurrence