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Healthcare Provider Uncertainty and Communicative Management Strategies

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HEALTHCARE PROVIDER UNCERTAINTY AND COMMUNICATIVE MANAGEMENT STRATEGIES

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Healthcare Provider Uncertainty and Communicative Management Strategies

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Uncertainty exists ubiquitously within provider-patient interactions. Healthcare providers (HCPs) often face uncertainty during patient-provider interactions, for reasons including inconclusive test results, ambiguous communication, and lacking the resources to make diagnoses. When healthcare providers experience uncertainty, their behavior and communication can be negatively impacted. For example, prior research suggests when HCPs experience uncertainty, they may engage in authoritative, prejudiced and assumption-ridden behavior towards patients (Dietta & Rand, 2007; Drewniak et al., 2017: Portnoy et al., 2013; Poteat et al., 2013). To date, research on HCP uncertainty has been limited to specific health conditions and contexts such as cancer, vascular anomalies, and asthma patients (Dietta & Rand, 2007; Kerr & Sisk, 2021). Additionally, studies that have explored uncertainty mainly focused on medical uncertainty, leaving relational uncertainty largely undefined and vaguely understood. This paper defines both medical and relational uncertainty and answers a call for the exploration of how healthcare providers manage uncertainty in broad contexts (Kerr et al., 2013). Specifically, this study explored the types of patient-provider interactions that cause uncertainty and how providers communicatively and behaviorally manage these types of uncertainty. Results from semi-structure interviews (N=16) with Montana-based healthcare providers suggest that providers can experience medical uncertainty due to ambiguous medical test results and medical examinations, a lack of patient health information, whereas relational uncertainty often arises due to assumptions providers make based on patient demographics. Relational and medical uncertainty are managed differently. Providers used action-oriented communication, such as scheduling a follow up to alleviate medical uncertainty (both theirs and the patient's). To manage relational uncertainty, providers used connection-oriented communication, such as listening to patients' story. Implications of this study include conceptualizations of the different types of uncertainty HCPs may experience and insight into effective uncertainty management strategies.

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HEALTHCARE PROVIDER UNCERTAINTY AND COMMUNICATIVE MANAGEMENT STRATEGIES

Uncertainty is an undeniable problem in healthcare and can have negative implications on practitioners, patients, and the healthcare system (e.g., Alam et al., 2017; Kerr et al., 2023). Patients and healthcare providers (HCPs) are faced with uncertainty in a variety of contexts that can result in negative consequences, such as a decrease in patient-centered care (Kerr et al., 2023), as well as an increase in medical errors (Graber et al., 2005) and incorrect diagnoses (Simpkin & Schwartzstein, 2016). Healthcare providers' uncertainty can negatively impact patient-provider shared decision-making (Alam et al., 2017; Pomare et al., 2019) as well as encourage paternalistic or discriminatory behaviors and communication (e.g., Dietta & Rand, 2007; Drewniak et al., 2017: Portnoy et al., 2013; Poteat et al., 2013). Because of the communication difficulties that arise due to uncertainty, healthcare providers may choose to engage in nondisclosure and oversimplification about medical knowledge (Parascandola et al., 2002).

Academic research has been conducted on providers' uncertainty management strategies (Han et al., 2021) in specific contexts such as vascular anomalies (Kerr & Sisk, 2021), genetic counseling (Zhong et al., 2020), and asthma patient/provider interactions (Dietta & Rand, 2007). Yet, few studies have explored how physicians communicate in order to manage their own, or their patients' uncertainty (Kerr et al., 2023), leading to the body of empirical research on this topic to be fragmented and incomplete (Han et al., 2011). Therefore, knowledge is limited about what healthcare interactions specifically cause uncertainty, the type of uncertainty that may arise and the ways providers' communication due to uncertainty. Managing uncertainty is crucial in the reduction of negative outcomes for both patients and providers (Kerr et al., 2023). By

examining the role uncertainty plays in healthcare interactions, researchers, medical professionals, and educators can understand how to reduce uncertainty and improve patient-provider interactions. When researchers and medical professionals are able to discuss and acknowledge the role uncertainty plays, hidden assumptions and unconscious biases come to light and providers are able to learn healthy management strategies to address uncertainty (Simpkin & Schwartzstein, 2016). In order to understand the phenomenon of provider uncertainty, the current study will explore what interactions create uncertainty and how uncertainty is managed by healthcare providers. Below is a literature review of empirical evidence regarding provider uncertainty, tolerance of uncertainty, and communicative management strategies.

Literature Review

Providers are a key component of healthcare. Patients rely on a doctor's or nurse's ability to communicate and explain health information. Healthcare providers communication can impact patient decision making, comprehension and the quality of care received. But medical professionals are often faced with high levels of ambiguity. In healthcare context, *uncertainty* is broadly defined by scholars as details in medical situations being ambiguous, complex, problematic and information being unavailable (see: Brashers, 2001; Rains et al., 2015; Zhong et al., 2020). Uncertainty is inherent in medical practices, yet it is often disregarded and criticized by medical professionals, educators, and health practitioners (Logan & Scott, 1996; Simpkin & Schwartzstein, 2016). However, healthcare providers are sometimes inadequately trained on how to manage uncertainty associated with patients (Kerr et al., 2023). When healthcare professionals ignore their uncertainty, it often results in patient dismissal (Guenter et al., 2011), withholding information (Simpkin & Schwartzstein, 2016), and paternalistic behaviors (Dietta & Rand, 2007; Drewniak et al., 2017)

Acknowledgement of uncertainty in healthcare interactions can improve the patient-provider interaction. Much of the literature on uncertainty has predominantly focused on medical uncertainty, yet this paper provides evidence that both medical and relational uncertainty can arise in healthcare interactions.

Medical Uncertainty

Medical uncertainty, or technical uncertainty, is broadly defined as insufficient information, knowledge or unpredictability when establishing medical diagnosis, prognosis, treatment efficacy or diseases (Brashers & Hogan, 2013; Ghosh, 2004; Lee et al., 2021, Rosen & Knauper, 2009). This definition has been used to account for the ways in which medical professionals experience ambiguity around inconclusive test results, findings, and medical information, as well as unknown prognoses and untested treatment options (Alam et al., 2017; Han et al., 2021). In the current study, the term *medical uncertainty* will be used to refer to providers' ambiguity around patients' physiological aliments as well as the absence of health history about patients. Both patients' and providers' can experience medical uncertainty, but this project will focus on provider uncertainty.

Medical uncertainty has been found to arise in multiple healthcare settings. For example, when conducting focus groups with genetic counselors, Zhong et al. (2020), realized medical uncertainty arose due to ambiguous test results, the unpredictability of genetic diseases, and continuously changing genetic testing mechanisms. In another study, providers who encounter vascular anomalies were faced with medical uncertainty due to the "lack of knowledge in the medical community and limited treatment options" available (Kerr & Sisk, 2021, p. 2839). Pathological disease can present in unique, unknown, and rare ways, which can cause providers to experience ambiguous observable symptoms, as well as inconclusive test results and medical examinations. Due to this lack of conclusive answers, providers may feel that they lack the

medical information, experience, and knowledge to diagnose a patient, which can impact the ways in which they communication and interact.

Due to the "breadth and complexity of diagnoses possible," medical uncertainty is "inevitable" (Alam et al., 2017, p. 2). When HCPs are unaware of how to explain ambiguous medical information appropriately and effectively (Lee et al., 2021), they may withhold information and utilize oversimplification of medical information which may lead to a lack of shared decision making (Parascandola et al., 2002), excessive testing (Logan & Scott, 1996; Simpkin & Schwartzstein, 2016) and incorrect diagnoses (Kerr et al., 2023; Simpkin & Schwartzstein, 2016) for patients. Providers may make medical decisions without patients' knowledge due to their fear of having to admit uncertainty (Drewniak et al., 2017; Redfern & Sinclair, 2014). Medical uncertainty when managed improperly can have negative impacts on patient care. Han et al., (2021) calls for "future research to identify uncertainty management strategies used by physicians and other healthcare providers" (p. 289) that are not solely information seeking strategies. Information seeking strategies are time consuming, and in an organizational setting that is time sensitive, these strategies may not be as effective in the short term. By examining uncertainty management strategies that nurses, physicians, emergency personnel and family care practitioners use, this study will provide nuance around why ambiguity arises in patient-provide interactions and can answer the call for low-cost, time-sensitive provider friendly tactics to reduce various types of uncertainty within healthcare encounters.

Uncertainty is not only restricted to medical information, but relational partner demographics can also impact ambiguous feelings in patient-provider interactions. Uncertainty can arise due to unpredictable patient responses, demographics, social and personal concerns. Medical and relational uncertainty are two separate and distinct, yet sometimes concurrent forms

of ambiguity that may arise in patient-provider interactions. The next section will explore literature around relational uncertainty and how it impacts healthcare interactions.

Relational Uncertainty

Another form of uncertainty that many arise in healthcare interactions is relational uncertainty. *Relational uncertainty* can be defined as the "absence of specific relational knowledge about a partner or situation" (O'Hair et al., 1996, p. 312). Perceptions of an individual's relational partner can be influenced by characteristics such as "personality, cognitive capacity, worldview and experience" (Lee et al., 2021, p. 1199) In the current study, *relational uncertainty* will refer to the ambiguity providers' experience when interacting and communicating with someone who has different or unfamiliar personal characteristics, worldviews, and experiences. HCPs may be unaware of how to effectively interact with and talk to patients who have a different cultural background or education than them (Lee et al., 2021; O'Hair et al., 1996). Providers may be unable to recognize or cope with relational uncertainty, therefore they make assumptions about patients based on characteristics they believe are relevant to diagnosis and treatment, such as race, ethnicity, and socioeconomic status (Balsa & McGuire, 2003; Burgess et al., 2006; Burgess, Fu & Van Ryn, 2004; Dietta & Rand, 2007). When facing uncertainty, doctors have been found to enact stereotypes (Burgess et al., 2006; Burgess, Fu & Van Ryn, 2004; Van Ryn & Fu, 2003) and prejudiced behaviors, such as withholding BIPOC patients from transplant lists, making medical decisions without patients' knowledge, or reducing communication with families of minority groups (Drewniak et al., 2017; Redfern & Sinclair, 2014). This conscious or subconscious discrimination based on patients' race, gender, or status can lead to physicians being authoritative, exclusive, and inequitable.

For example, a lack of experience working with LGBTQ+ individuals can lead to relational uncertainty for providers (Table et al., 2022), which can cause providers to rely on

stereotypes, therefore enacting behaviors such as the denial of gender identity, refusing medical treatment, or blaming patients for their health status (Redfern & Sinclair, 2014). Due to relational uncertainty and the application of stereotypes, HCPs may also dismiss personal circumstances that are important in understanding a patient's personal health and needs (Van Ryn & Fu, 2003). For example, researchers have found that BIPOC patients may be less likely to receive follow-up assessment from providers than their white counterparts and quicker to be given a disease diagnosis without testing (Van Ryn & Fu, 2003; Drewniak et al., 2017).

Specifically, differences between patients' and providers' race have also been found to create barriers to effective care (Diette & Rand, 2007). Providers may enact behaviors that can reinforce medical authority, thereby inhibiting patient-centered care. For example, Song and colleagues (2012) found that providers who treated African-American cancer patients relied upon personal perceptions of patients' knowledge to choose whether or not to allow them to partake in treatment decisions.

Relational uncertainty may encourage such avoidant or indirect communication strategies (Portnoy et al., 2013), and when faced with such uncertainty, providers may consider patient socio-ecological factors, such as financial situation, education status, access to healthcare services and race, when deciding which treatment options to suggest to patients (Diette & Rand, 2007; Gerrity et al., 1990; Ghosh, 2014; Song et al., 2012). For example, providers who have treated Black dialysis patients have been found to withhold information around kidney replacement (Van Ryn & Fu, 2003). As another example, when looking at physicians' interactions with transgender patients, Redfern and Sinclair (2014) found that 61% of physicians reported that transgender patients would be better off relinquishing their gender affirming surgery rights. Due to these beliefs, those providers are less likely to recommend transgender

individuals to partake in transitional surgery. Not only do patient demographics impact relational uncertainty, so do provider demographics.

However, HCPs may become more resilient to medical or relational uncertainty as they gain experience in the medical field and learn about uncertainty management strategies (Alam et al., 2017; Lee et al., 2021; Portnoy et al., 2013). Therefore, the next section will examine how tolerance of uncertainty can hinder or improve patient-provider interactions.

Tolerance of Uncertainty

Tolerance of uncertainty refers to how individuals "cognitively, emotionally and behaviorally react to uncertainty" (Rosen et al., 2007, p. 414). Tolerance of uncertainty can impact a provider's diagnostic decisions, patient care, and ability to problem-solve (Alam et al., 2017), and may influence how providers communicate with patients (Ghosh, 2004; Lee et al., 2013; Portnoy et al., 2013). Medical providers may choose to tell patients more or less information about a treatment or engage in non-direct communication with them, depending on how they perceive patients. Uncertainty tolerance can range from high to low. Providers with high tolerance of uncertainty are more resilient and comfortable with uncertain events or situations, and may be more engaging, interactive, and allow patients to partake in shared decision-making (Alam et al., 2017). Healthcare providers with low tolerance may "negatively react to uncertain events or situations" (Rosen & Knauper et al., 2009, p. 228) and lack awareness of their own ambiguity, which will influence their communication and decision-making behaviors (Reiff et al., 2014). Low tolerance of uncertainty has also been linked to high levels of worry, anxiety, and stress for medical professionals (Kerr et al., 2023). For instance, HCPs with lower tolerance of uncertainty are less likely to offer new kinds of medical testing or tell patients about confusing test results (Portnoy et al., 2013). HCPs who lack the ability to cope with uncertainty may engage in unethical medical communication with their patients, such as

dismissing their symptoms, failing to disclose medical information, and promoting paternalistic decision-making (Portnoy et al., 2013; Drewniak et al., 2017)

Research has shown that HCPs' demographics can impact their uncertainty tolerance (Gerrity et al., 1990; Ghosh et al., 2014). Alam and colleagues (2017) found that female general practitioners were less tolerant of diagnostic uncertainty than male providers. Healthcare providers who have practiced medicine for extended periods of time are more tolerant of uncertainty, have more effective management strategies and partake in higher disclosing efforts related to uncertainty (Gerrity et al., 1990; Portnoy et al., 2013).

Uncertainty and Health Disparities

Physicians' perceptions, attitudes, and past experiences can impact the quality of communication and quality of care they provide (Dietta & Rand, 2007), resulting in disparities in health outcomes between populations. *Health disparities* can be defined as "differences and/or gaps in the quality of health and healthcare across racial, ethnic, and socio-economic groups" (Riley, 2012, p. 168). Yet, Riley (2012) argues health disparities do not arise solely based on race, ethnicity and economic class but also can be present due to "age, sexual orientation, lack of access, and environmental characteristics" (p. 168). When medical providers experience uncertainty, they may be less inclined to gather patient medical information and engage in patient shared decision-making, and more inclined to adopt stigmatizing attitudes towards patients (Portnoy et al., 2013; Poteat et al., 2013; Zhong et al., 2020). For example, Van Ryn and Fu (2003) discuss that providers attitudes and assumptions towards patients can influence the communication that is adopted in patient-provider interactions. Providers may be inclined to provide more or less information about resources, lower communication expectations, and choose the types of treatment or services to give patients based on racial or ethnic backgrounds (Van Ryn and Fu, 2003). When confronted with a high level of uncertainty,

providers place a "higher weight on patient characteristics and lower emphasis on signals and symptoms" (Balsa & McGuire, 2003, p. 96). This kind of assumption-making, stereotyping, and prejudice can be damaging for populations who are stigmatized, such as racial/ethnic minority groups, lower socioeconomic class individuals and LGBTQ+ individuals (Burgess et al., 2006). Therefore, it is important for researchers to study providers' experiences with and behaviors around uncertainty and the ways that this may create or exacerbate health disparities. Through research, providers can become aware of how personal uncertainty can influence patient-provider interactions and learn effective uncertainty management strategies to implement.

To understand when and how providers experience uncertainty and strategies they use to navigate uncertainty, the current study will address the following research questions:

RQ1: How do providers communicatively manage medical uncertainty during patient-provider interactions?

RQ2: How do providers communicatively manage relational uncertainty during patient-provider interactions?

Methods

Recruitment

After getting IRB approval in the winter of 2023, I recruited participants via purposive and snowball sampling. I shared IRB-approved language with my personal network via email and social media, including Facebook and Instagram (see Appendix A for recruitment flier; see Appendix B for recruitment language). I also reached out to personal healthcare connections in Missoula, Ronan, and St. Ignatius. Potential participants were asked to complete a Qualtrics consent form and screening to ensure they met the study's demographic requirements (see Appendix C). Eligible participants were prompted to schedule an interview via SignUpGenuis or

through phone calls and were asked to share the project's recruitment language with their professional peers.

Participants

Eligible participants were over the age of 18, worked as a nurse, primary-care doctor, physician's assistant, family practitioner or nurse practitioner in a hospital, private practice, or clinical setting in the state of Montana, and had practiced medicine for at least one year. It is imperative to study how medical providers communicate when faced with uncertainty, because their communication can have implications for patient health outcomes. Existing literature has focused predominantly on patient uncertainty, leaving knowledge incomplete on how healthcare providers communicatively manage their personal uncertainty. I recruited medical professionals from minority-serving and lower income clinics, as well as higher socio-economic locations, to provide a rich understanding of providers' uncertainty experiences. Non-traditional and naturopathic professionals, such as physical therapists, naturopaths, acupuncturists, massage therapists were excluded from this study due to increased time allotment these professionals typically have with patients.

Participants included 16 adults, 14 of whom identified as female (87.5 %), while two identified as male (12.5 %). Medical experience ranged from 6 months to 43 years (M=20.6 years), with 56.26% (*n*= 9) identifying as nurses or nurse practitioners, 37.50% (*n*= 6) as physicians, and 6.25% (*n*=1) as physicians' assistants. Participant age varied from 22 to 67 years of age (M= 48.3 years), identifying as White (93.75%; *n* = 15), and Native American (6.25%; *n* = 1). According to the U.S. Census (2023), rural locations classify as having populations under 5,000 residents. In this dataset, five (31.25%) participants work in rural communities and 11 (68.75%) work in urban communities.

Table 1
Participant Demographic

Demographic	**Number of participants (M=mean)**
Age	M = 48.3 Lower = 22; Higher = 67
Medical Experience	M= 20.6 Lower = 6 months; Higher = 43 years
Sex	
Female	14
Male	2
Race	
White	15
Native American	1
Job Titles	
Nurse/Nurse Practitioner	9
Physician	6
Physician's Assistant	1
Geographical Location	
Rural	5
Urban	11

Data Collection

Due to the ongoing and intricate nature of uncertainty, semi-structured interviews were utilized to provide participants space to elaborate on context, which may garner less defensive and richer data that ethnographic observations (see Appendix D for my interview guide). According to Brinkmann and Kvale (2018), semi-structured interviews allow researchers to obtain descriptions of lived experiences to interpret the meaning of a specific phenomenon. Interviews provided the opportunity to more fully understand how healthcare providers engage in sense-making about their uncertainty and the hidden assumptions that may arise due to patient demographic information. Interviews were conducted via Zoom or over the phone and ranged

from 19 to 60 minutes (M= 37 minutes). Interviews began with personal introductions and a brief overview of the study, including verbal consent of recording. Participants were asked demographic information (e.g., age, race, location, years in healthcare, gender) before interviews progressed into a pre-established interview guide. Questions covered topics such as providers experience with medical uncertainty (e.g., "Tell me about a time when you were giving an uncertain diagnosis to a patient. What did you do and why did you do it?"), providers' experiences with relational uncertainty (e.g., "When meeting a patient for the first time, how do you decide to engage with that patient?") and ways providers utilized communication to manage their uncertainty (e.g., "What kind of communication do you try to use to get more information from patients"). When needed, follow-up questions were asked to get participants to elaborate or clarify their responses. Interviews concluded by asking participants if they wanted to discuss anything that they felt like pertained to the study and thanking the participant for their time.

Participants were assigned pseudonyms and participant numbers immediately upon completion of the interview to protect confidentiality. The number key and pseudonym guide were kept in a separate Excel document stored in a separate file that is password protected.

Data Analysis

Interview transcripts were analyzed using an *iterative phronetic approach* (Tracy, 2019). This process allowed me to look through the dataset and develop insight into providers' experiences of medical and relational uncertainty and the communication behaviors adopted, while leaving room for new themes to emerge throughout the dataset.

First, a primary-cycle coding process was used on the transcripts (Tracy, 2019). Units – typically phrases or short sentences – were pulled out of the dataset based on recurrence, repetition, and forcefulness (Owen, 1984). These unites were organized into representative

codes. To check for bias and consistency, Dr. Voorhees and I separately coded one-fifth of the transcripts (*n* =3) and then met to compare and discuss codes that arose. Once we reached consensus about relevant codes, I created a codebook that stated code names, definitions and exemplars of each code which allowed me to stay organized and understand the overarching codes. I then individually coded the remaining transcripts using existing codes and creating codes to fit new data. Coding in the primary cycle progressed until all transcripts had been reviewed and no new themes arose. The primary-coding cycle resulted in 10 overarching codes, such as "medical uncertainty," "relational uncertainty," "trust building," "systemic barriers affecting care." Dr. Voorhees and I met again to discuss codes to ensure that overarching ideas were representative of the data.

Next, I conducted secondary-cycle coding, where identified codes were combined, refined, deleted, and changed into overarching themes that clearly reflected the dataset. At this point, the data showed that both relational and medical uncertainty were prominent themes, but sub-themes emerged on how participants navigated these two different kinds of uncertainty. Therefore, second-level themes were created to capture how uncertainty management occurred and impacted the patient-provider interaction. In the second-cycle coding phase, three prominent themes arose: medical uncertainty, relational uncertainty, and tailoring to patient needs. Both medical and relational uncertainty were found to inspire different communication tactics and behaviors, while all providers mentioned that for treatment plans to be effective, they needed to be tailored to patient needs.

Results

Participants (N=16) described differences between how they experience and communicate medical and relational uncertainty when interacting with patients. Participants

explained situations in which they felt medical uncertainty due to inconclusive test results, lack of patient history, and ambiguity around medical information and described specific tactics they used to eliminate or decrease that uncertainty for both themselves and their patients. Additionally, they described situations in which relational uncertainty, or confusion about a patient's personal circumstance, desired interpersonal outcomes or preferred communication, and specific tactics they used to reduce uncertainty for themselves and their patients. Below, medical, and relational uncertainty are discussed along with the communication and behaviors adapted based on the uncertainty experience.

Medical Uncertainty

While discussing patient-provider interactions, medical uncertainty arose as one of the prominent areas of ambiguity that participants experienced. Medical uncertainty can be summarized having an incomplete understanding of the physiological aliment of patients. Participants experienced medical uncertainty when faced with inconclusive test results, diagnoses, and/or medical examinations. Due to the lack of medical answers, participants adopted communicative and action-oriented behaviors aimed at reducing medical uncertainty, both their own and that of their patients. Below are common themes that emerged from the dataset about how participants managed and communicated their medical uncertainty (See Appendix E, Table 2).

How providers communicate their medical uncertainty to patients

When faced with ambiguity about medical tests, examinations and answers, participants described taking different communicative approaches to tell patients they are unable to diagnose medical conditions. Participants mentioned that when faced with medical uncertainty, there was

a need to be honest with patients about a lack of answers. Following are common tactics providers used to communication medical uncertainty with their patients.

Offering multiple explanations. Participants communicated their uncertainty to patients through offering multiple explanations for physical symptoms. Specifically, participants would tell patients a variety of possibilities that could be causing physiological ailments and give patients their opinion as to what the most likely cause was of patient's condition. For example, Luke, a primary care physician, mentioned that he approached a patient with kidney problems and said it could be "X, Y, Z as a possible cause." Through acknowledging the lack of specific cause, participants admitted that medical testing and examinations did not provide a direct answer of patient's condition.

Transparency with patients. Another way participants communicated uncertainty was transparency with patients, such as admitting that participants did not have medical answers and being honest about inconclusive medical information. By being transparent, participants were able to positively communicate why they were not able to answer patients' questions or concerns. Zoey, a nurse practitioner, mentioned that she is "always very straightforward" with her patients through saying "we've done so many tests and there's nothing, so it's inconclusive." Participants chose transparency when they had no possible explanations as to what was causing the physical ailments. Kayla, a family nurse practitioner, mentioned that it was "better to be straightforward" with patients about their medical uncertainty rather that "pretending you [know something] and being wrong." These communicative acts allowed individuals to admit uncertainty in a positive way rather than dismissing patient concerns and giving unconfirmed medical diagnosis.

How providers manage their own medical uncertainty

Besides communicating medical uncertainty to patients, many participants also discussed ways they personally managed their uncertainty, including answer-seeking behaviors aimed at seeking confirmation of medical conditions. All behaviors in this sub-theme were still aimed at finding answers for patients, but ownership of patient care changed. Two of the sub-themes laying out a plan of action and asking open-ended questions arose through communication that emphasized shared decision making with the patient, whereas consulting others and handing off care consisted of behaviors that did not include that patient but rather were about the patient care options. The following sections are communication behavior approaches participants adopted to manage *their personal* medical uncertainty.

Laying out a plan of action. Participants laid out a plan of action to clarify how patient and providers could find answers, such as discussing further testing or medical examination. Abby, a primary care physician, mentioned that she would "make a plan" with patients on the course of action "to clarify the diagnosis." Another participant, Lacey, who is also a physician, laid out options in the terms of "going to the E.R." to get patients concerned "addressed right now" or "getting a lab" to look at blood pathology. These participants took an answer-seeking approach with patients on how further medical examinations needed to be conducted to gain certainty around medical diagnoses. Laying out a plan of action also gave patients and providers a space to voice their concerns, opinions, and work as a team to decide what the next course of action would be.

Asking open-ended questions. When providers sought to make a diagnosis, they also enacted the answer-seeking behavior of asking open-ended questions like "Why they were admitted," "What are you concerns?" or "What kind of pain are you feeling?" Through the use of

open-ended questions, participants were able to leave space for patient to provide additional information that could give them answers as to what care patients need.

Consulting other medical professionals. When unsure about a diagnosis, participants sometimes consulted other medical professionals to find answers. By consulting other medical professionals, participants were able to seek additional information, resources, and opinions to reduce ambiguity about the patient's condition and physical alignments. For example, Marley, a registered nurse mentioned that when she was "unsure about a patient" she would just "ask my resources." In this instance, participants were not passing off care, but rather seeking outside opinions and insights in the hope of finding answers aimed at reducing their medical uncertainty.

Handing off care. Some participants who were faced with medical uncertainty made the decision to pass off patient care to more specialized healthcare professionals. Participants in this category approached uncertainty by admitting to patients that the appropriate care was out of their specific scope of practice. This included referring patients to outside specialists, such as dermatologists or oncologists, to find answers. For example, Abby, a primary care physician, remembered how, with one specific patient, she "moved forward in terms of getting an opinion from an infectious disease doctor to see if further testing could help clarify this diagnosis." These participants who admitted where their skills ended and passed "ownership" of patients to medical professionals whose practical skills were better adapted to finding answers for patients.

In summary, medical professionals engaged in different behaviors to reduce their own medical uncertainty by gaining insight, finding answers of conducting further medical examinations. Yet, when participants were worried about *patient* uncertainty, different behavior approaches occurred. These behaviors were aimed at helping patients navigate ambiguous test results, understand health information, and reduce patient worries.

How providers communicate to reduce patient medical uncertainty

When medical professionals discussed health information with patients, they sometimes suspected or worried that patients may be fearful about the medical information they were about to receive, or that patients may not understand their diagnoses, treatment options, or long-term ramifications. Many participants mentioned communication tools and behaviors that decreased patients' medical uncertainty. The following sections will discuss communication behaviors participants adopted to *reduce patient* medical uncertainty.

Affirming that illness is non-life threatening. The first way participants reduced patients' medical uncertainty was through offering affirmations in the form of telling patients their diagnosis was not life threatening. These communicative acts consisted of reassuring patients that their medical conditions were not critical or that patients were not in danger of losing their life. Rachel, an E.R. nurse, would "reassure" patients that "they have no life-threatening diagnosis." A registered nurse Megan, mentioned that by distinguishing that a condition was not life threatening "patients can be at ease." Through affirming that the patient's condition was not life threatening, participants felt like patients were able to relax and certain that their condition was treatable.

Validating patients' feelings. A second way participants reduced patients' medical uncertainty was through validating patients' feelings. This was communicated by acknowledging what patients were feeling in the moment and telling patients that their feelings were acceptable and appropriate. These communicative acts allowed participants to make the patient-provider interaction a place of comfort and support, rather than a place of fear. Abby, a primary care physician, "acknowledged the stress that sitting with uncertainty was going to cause" her patient who may have cancer by saying "this is hard because I understand this possibility is really scary

for you." Through recognizing the ambiguity that patients were under and acknowledging their fears of possible diagnoses, participants were able to adopt strategies that helped reduce patient uncertainty.

Scheduling follow-ups. A third way participants reduced patient uncertainty was through scheduling a follow-up. Some participants affirmed that a follow-up allowed patients a chance to ask questions once they had digested medical information. Lila, a physician's assistant emphasized the important of "making a follow-up call" whenever she had to "go in and give a bad diagnosis or tell someone they have cancer." Specifically, Lila reflected that this enabled both her and her patients to ask more questions or for patients to gain more information about what this diagnosis meant or the next steps of care.

Giving patients take-home materials. Finally, participants were found to give patients a take-home resource after medical visits, such as written doctor recommendations, or printed summaries of the medical examination. This ensured that patients would have a reference guide to absorb or understand what was discussed during the visit or answer questions they may have about the medical appointment. For example, Mark, a primary care physician, mentioned that he gives patients his after-visit summary so that they have something to refer to after the visit. By providing patients with a reference guide, participants were able to feel comfortable that patients were equipped with the tools they needed to answer medical questions.

Ways providers adopt communication to explain medical information to patients

When discussing diagnoses, participants adopted various measures to simplify communication. Many participants described using strategies such as diagrams, metaphors, and specific word phrasing to help patients understand large medical terms and diagnoses. These behaviors emphasized that participants were worried they may not otherwise be able to relay

medical information to patients accurately. Therefore, participants enacted three communicative behaviors to reduce communication errors between patient-providers. The following are common tactics providers used to communicate with patients in an effort to reduce the patient's confusion or uncertainty about medical information.

Using imagery. The first behavior was utilizing imagery to explain medical information to patients. Participants described using diagrams, pictures, and models to help patients understand diagnoses, medical terminology, or other details about their condition. This allowed for a decrease in ambiguity and miscommunication. Kayla, a family nurse practitioner, mentioned that "you give people pictures, it's easier to explain things to them and explain to them how certain issues make them feel." By using images, Kayla was able to "connect things" for patients by simplifying and conveying appropriately the medical information that related to patient diagnoses.

Making medical information personally relevant. Another behavior participants used was making information personally relevant for patients. By pinpointing something that patients cared about and communicating how that aspect may be impacted by their medical diagnosis, participants were able to clarify how the medical information would impact the patient's life. This helped participants feel confident their patients would understand the medical information and that patients understood their role in the healthcare team. Specifically, Abby, a primary care physician would say:

> "You know, medicine often isn't really in English. And so, one of my jobs is to translate like cardiologists into English. I use a lot of metaphors or just you know try to…if somebody is a mechanic, I'll say, 'okay think of it in terms of hydraulics and hoses and pumps.' Trying to put it in their terms."

By putting medical information in terms that patients understood, participants felt like information was conveyed in a way that patients understood. This allowed for simplification and a decrease in miscommunication.

Using simple terms. The third behavior participants adopted was the use of simplifying medical information for patients. Many participants mentioned that by putting medical information into "laymen terms" they were to help participants understand what medications were and to make medical information digestible for patients. Grace who is a registered nurse, would explain medical information in a way that "makes sense to like my mom," because "she doesn't understand medical things." This allowed Grace to perceive that the information she was relaying to patients would be easier to understand, thereby reducing their uncertainty about symptoms, treatments, or diagnoses.

Integrating patients' family into care teams. When working with patients who had cognitive impairments or serious diagnoses, some participants brought family members into medical appointments, sometimes by having whole-family meetings when communicating health information. Family members were often able to share details of the patient's health that the patients themselves had forgotten or could not vocalize, and sometimes were able to help explain complicated medical concepts to the patient. Emma, a primary care physician was able to use family members to "get somebody else's perspective" and "break down the barriers that made it so that patients" could understand the medical information being given. This tactic helped participants learn about patients' health information, decrease miscommunication, and ensure patients need and questions were being met.

In summary, participants utilized different behaviors to reduce their own uncertainty than to reduce patients' medical uncertainty. In this dataset, participants believed that by adopting certain behaviors they were able to find answers and improve patient understanding.

Relational Uncertainty

When discussing patient-provider interactions, another key theme that arose was relational uncertainty. Relational uncertainty in this data set can be defined as ambiguity medical professionals experience when interacting with patients who differ in demographics. Participants discussed that certain demographic observations tailored how they would communicate with patients. Specifically, relational uncertainty arose when participants felt unsure of how-to interaction with patients due to their demographics, in particular race, culture, economic class, and substance use. Many participants shared their assumptions, centered on patient demographic information, about which patients would be reluctant to disclose information, and adopted special tactics to specifically encourage open and honest dialogue. Many of the participants identified "stigma" and "distrust" due to "judgement" from medical professionals as reasons certain patients hesitated to disclose information.

For example, many participants said they believed that Native Americans were more private with personal information. Marley, a registered nurse, mentioned that "we have a huge Native American culture here and they tend to be more quiet or withdrawn or secretive about their lifestyles." Marley was not the only healthcare provider to hold assumptions about the relationship between Native American and white providers. Megan, a registered nurse, mentioned that there are still "stigmas that Native people face" when they come into a clinic. Luke and other participants felt that the patients' reticence arose due to the providers being "Caucasian," therefore they were met with "distrust." Given the systemic barriers and historical

relationship between Native American and white patients and providers, participants' perception of patient distrust not surprising.

Participants also perceived individuals who came from Hutterite colonies to be withdrawn and reluctant when disclosing health information. Additionally, Marley stated that "Farmers, oh god the farming community, they don't want to talk about anything." Individuals who are in the Hutterite farming community, have demanding jobs and tend to live in rural places. Therefore, due to the physical demands of their day-to-day life, farmers may be reluctant to disclose health information due to fears of not being able to return to their farming duties.

Many participants mentioned that their economic-related assumptions arose due to beliefs that lower socio-economic individuals "distrusted providers" and that they "struggled accessing the healthcare community" and "worried about costs" therefore they were less likely to reveal information to providers. Abby, a primary care physician, mentioned that uncertainty arose working with individuals with lower socio-economic status (SES) due to her assumption that, "sometimes they get a little bit nervous accessing the medical community, they don't know how much things are going to cost, and that is a huge issue." Grace a registered nurse, faced similar assumption-based uncertainties with lower SES individuals because "they don't want to admit to you, maybe if something is serious, because they're worried that you're going to recommend something expensive or a visit to a specialist." When participants encountered individuals who were lower in socio-economic status, they assumed that individuals were less willing to be honest about symptoms due to fears about escalating medical costs, therefore creating closed-off interactions.

Similarly, participants assumed individuals who used drugs or alcohol were more reluctant to share information due to "judgement," "stigmatization" and "being recurrent

patients." Specifically, Claire an emergency nurse, mentioned that "there's some information that people are more willing and it's easier for them to give up" yet, "there's some information that people perceive they're going to be judged for more than others." Claire speculated that when her patients used drugs, they were less likely to admit their drug usage due to fears of judgement. When working with or inquiring about drug and alcohol use, many participants learned that substance users were less likely to give information due to fears of stigmatization.

In summary, healthcare providers made assumptions about how certain patients viewed them, which often led to uncertainty about the type of care that patients needed and wanted. Participants therefore adjusted their communication with patients from different cultural backgrounds than their own, whom they assumed had stigma- or mistreatment-related reasons for not being totally open. This demonstrates that when stereotypes are present in patient-provider interactions, communicative behaviors can be impacted, resulting in reinforced stigmatization and health disparities. Yet, when managed effectively, healthcare providers can begin to break down the walls of inequality.

Communication behaviors tailored to manage uncertainty

Regardless of why participants experienced relational uncertainty, they adopted certain connection-oriented behaviors intended to foster trust, openness and learn about patients' socioecological conditions. In this dataset, participants described seven behaviors they used to reduce relational uncertainty based on assumptions they held about patients. These consisted of: (a) providing resources to patients; (b) spending more time with patient to learn about their story; (c) ignoring patient behavior; (d) changing non-verbal behaviors; (e) disclosing personal information; (f) utilizing listening; and (g) establishing a connection with patients (See Appendix E, Table 2).

Providing resources to patients. When participants experienced relational uncertainty with patients, they reported offering patients' resources to ensure they were getting the care they needed, regardless of their ethnicity, income or substance use status (about which the providers were uncertain). This included taking the time to tell patients about funding programs, medical cost reduction programs, and other resources aimed at reducing barriers such as cost and transportation issues. These actions emphasized that participants suspected patients might be unable to gain the appropriate medical care required, despite patients' hesitancy to directly admit that. Rachel, an emergency nurse mentioned that she will automatically find programs to help patients, whether or not they request such assistance:

> "We have a program called Assist that we can use to help out with patients and costs that they can't meet. We can try to look up pharmacy coupons for the patient and call their primary care provider and see if they have any ideas. And then sometimes if the treatment is something we are prescribing, we'll call the pharmacy and make sure the patient's getting the generic thing. Or, like, sometimes, pharmacies will call us and say 'Hey, the patient can't afford this med.' So, the doctor might change the prescription to something that they can afford."

Because they felt relational uncertainty about certain patients, participants automatically provided resources that patients did not directly ask for, to help them navigate assumed barriers to healthcare.

Devoting time to learn about patients' story. When working with patients whom they believed would be reluctant to disclose information, participants tended to alter the time spent with them, in order to learn about their life experiences and circumstances. Participants like

Maggie, a nurse practitioner, would intentionally "act like" they had time. By intentionally spending time with patients, Luke, a primary-care physician mentioned being able to "break down those barriers and reluctance" which meant that patients are "going to tell me more that's going to allow me to help them and make better recommendations." Through intentionally devoting time to patients, participants were able to learn about patient circumstances, as well as build trust. Abby, a primary care physician, also mentioned that time was essential to learning about patients "lifestyle, occupation, the environment somebody lives in," which makes a "huge difference in terms of patients access to healthcare and their overall health." Time-oriented behaviors equipped participants with the ability to learn more about patients' socioecological factors that could impact health decisions, recommendations, and decisions.

Looking past defensive patient behavior. Some participants described being tested or pushed by patients when their demographic characteristics were different from their own. Providers who worked on Native American Reservations tended to sense reluctance and skepticism from clinic patients but noted that purposefully ignoring such patient behavior allowed them to continue giving patients care they needed. Megan, a registered nurse, mentioned that many of her patients, "test the waters with you. Some of them will come in and they'll be really reserved and they kind of look you up and down and not smiling." Rather than having a negative reaction to these patients' behaviors, Megan mentioned "it's just ignoring that, moving on, and being as friendly as possible." By ignoring patients' negative behavior, medical examinations and appointments would go smoother and easier if they were "just friendly."

Changing non-verbal behavior. Many participants mentioned that, when faced with relational uncertainty, non-verbal behaviors were the key to positive health interactions. Participants would intentionally change their non-verbal behaviors to be more relationship-

centered, less authoritative, and more open. This looked like utilizing eye-contact, sitting down, and changing their tone. By using specific non-verbal behaviors, providers believed that they made patients feel more comfortable, cared for and trusted. Lila, a physician's assistant, stated that "eye contact," "facing the patient" and "typing in information later" were important to establishing trust. Participants felt like the body language that they utilized during medical examinations could cause the patients to be more reserved or open depending on what behaviors were enacted. Specifically, Zoey, a nurse practitioner, mentioned that "you can see the patient shut down" if providers "walked into the room and they're hovering over them with your arms crossed because you have a higher chance of not building trust with them." Non-verbal behaviors arose as a crucial component of how participants could reduce relational uncertainty and increase patient cooperation through trust and comfortability.

Disclosing personal information. To build rapport and a relationship of trust, participants sometimes disclosed personal information to patients. This included telling patients about their families, where they lived and hobbies they had. By utilizing personal disclosure, participants felt like they could relate to their patients on a deeper level, allowing them to initiate conversation with patients more easily. When working with patients they assumed were reluctant to disclose information, participants utilized personal disclosure to ease into conversation and build open patient-provider interactions. Luke, a primary care physician, mentioned that by telling patients about his family or where he lived, he was able "to see that the connection established was much tighter" because it "broke the ice" with the patient. By engaging in personal disclosure, participants perceived they were establishing a relationship of trust, respect, and closeness, which helped the medical examination feel more open, free-flowing, and easier to navigate.

Active listening. When participants assumed that patients were reluctant to disclose health information, some said active listening allowed them to learn more about the patient. By allowing patients time to talk about their lives, circumstances and medical questions, participants were able to learn more about socioecological and medical constraints patients were under that impacted their health. This also allowed participants to build a sense of trust. Bethany, a family care practitioner, mentioned that "if you let them talk for the first 90 seconds, you pretty much learn everything you need to know." Other participants mentioned that listening allowed them to gain a "bigger picture" and "hear why patients act the way that they do," which allowed them to be more "empathetic," "build a relationship" and "learn about patients' history." This reduce relational uncertainty because providers were able to gain insight into the patient's life, learn about what concerned them, and ways to treat the patient to improve the care experience.

"Connect before you correct". Participants mentioned that connection was important in building interactions that were friendly, caring and based on a positive rapport. By finding a commonality or learning about personal patient information, providers were able to help meet patient care needs. Mark, a primary care physician, mentioned that you must "connect before you correct." When working with patients, Mark would find different ways to establish a relationship. Specifically, he mentioned:

> "And sometimes, I think it's, you know… kids for example, I'll have them teach me some Salish. You'll find different ways to kind of you know, bring them into the conversation. Even a three-year-old. I mean, that's so much fun. I'll play games with them. I'll sit on the floor with them. We'll do the magic light."

Depending on patient circumstance, age, geographical location or race, participants found ways to build a connection with patients to facilitate positive patient-centered interactions that allowed for a less authoritative, more open medical interaction.

In summary, results from this dataset show that participants adopted different communication and behaviors depending on the medical-relational uncertainty that they were experiencing – and that different communicative behaviors were used to alleviate either type of uncertainty. Tactics to relieve medical uncertainty centered around reducing patient and personal ambiguity regarding pathological ailments and medical information. Relational uncertainty alleviation focused on relationship-centered tactics which encompassed learning about patients' socioecological fabrics. The most important components to positive patient-provider interactions and the reduction of uncertainty in medical professionals is an on-going relationship and adaptability.

Discussion

This qualitative study explored the types of uncertainty experienced, and the strategies used to manage uncertainty, by physicians in diverse multi-specialty healthcare settings. Previous literature has explored the role uncertainty plays in medical interactions and the types of strategies used to mitigate it (Han et al., 2021). Yet, research has predominantly focused on medical uncertainty, leaving the definition of relational uncertainty, and the understanding of how providers manage relational uncertainty, to be vague. The current study extends research by defining both medical and relational uncertainty and identifying the different behaviors that medical professionals use to manage these types of uncertainty. This qualitative analysis provides useful insight into understanding how uncertainty arises in healthcare interactions, the ways uncertainty impacts communication and behaviors, and how healthcare providers can

manage medical and relational uncertainty in a time-constrained, profit-ridden setting. Three contributions were found in this dataset that are important for practical and clinical applications.

Defining relational uncertainty

The first key finding was a clear definition of *relational uncertainty*, including what it looks like and when it is experienced. Relational uncertainty in this data set was defined as medical professionals being ambiguous about how to communicate and connect with patients due to differing demographics. Relational uncertainty was often related to physicians' underlying assumptions based on patient demographics. Specifically, relational uncertainty was prominent when healthcare providers were unaware of how to interact with the patients based on their race, education, age, socioeconomic class, or substance use behaviors. When providers are aware of what relational uncertainty is and how it manifests, they will be better equipped to enact specific communicative behaviors to learn about patient's experiences, circumstances, and economic standing, which lets them gain a bigger picture of the patient's socioecological health barriers. When they are short on time, providers may adopt communicative behaviors such as active listening and disclosing personal information to quickly build relationships, foster trust and, ultimately, reduce relational uncertainty.

Uncertainty influencing communication

The second key finding was that healthcare professionals tailored their approach behaviors based on the type of uncertainty experienced. When faced with medical uncertainty, providers in this study tended to adopt action-oriented behaviors that allowed them to gain clarification, answers, and insight into patient's medical circumstances. By consulting other medical professionals, being transparent about uncertainty, and making a plan of action, physicians were able to request further testing, gain new insight, and seek specialized help in

order to learn about patient's physiological condition. Action-oriented behaviors like these have the goal of gathering information and solving problems, which help the provider get a more complete picture of the patient's overall physical and mental health and health-related needs. However, when faced with relational uncertainty, providers adopted connection-oriented communication that focused primarily on relationship building, boosting trust, and creating connections that fostered open and discussion-based patient-provider interactions. By alleviating relational uncertainty in this manner, healthcare providers were able to learn more about the patient's needs, preferences, and their life stories, which may encourage more openness.

Ultimately, uncertainty arises in many healthcare interactions, but because uncertainty management strategies differ based on the type of uncertainty, physicians need to be aware of whether the ambiguity they feel is due to inconclusive test results or if it stems from lack of awareness of how to interact with patients on a personal level. The findings of this study can teach healthcare providers how to identify which type of uncertainty they are experiencing so they can employ the most effective management strategies in a limited amount of time. See Appendix F for a quick guide to behaviors that are shown to reduce both relational and medical uncertainty.

Ongoing relationships

Finally, when interacting with patients, providers in this study understood that patients had different barriers, needs, concerns and experiences with the healthcare system. Providers who can realize that a one-size-fits-all approach is ineffective when it comes to patient health will be more successful. Whether individuals experience relational or medical uncertainty, medical interactions need to be tailored to the patient and their needs. Many individuals will present with different pathological or demographic circumstances that can impact their health,

well-being, and interaction with the healthcare system. Providers must be flexible and adaptable when it comes to medical examinations, communication, and behavior. Adaptability allows for providers to see "what about patients situations make them different" and find a "plan that works in their lives." Without tailoring medical appointments to the specific patients, healthcare professionals are not going to be successful.

It is important to note that many participants mentioned that the long-term solution to relational uncertainty was having an ongoing relationship with patients. Ongoing relationships allowed healthcare providers and patients to become more comfortable, honest, open, and trusting because time allows participants to learn about patients' barriers, concerns, and life circumstances, thus giving them more insight on how to tailor their interactions to be the most effective and efficient. Yet, in a setting that is under rigorous time, financial and employee constraints, ongoing relationships might not be a possible solution. Providers can benefit from enacting the relational and medical reduction strategies discussed in this paper to find short-term uncertainty reduction benefits.

In the future, when medical professionals are engaging with new patients, adopting certain uncertainty management strategies can give them skills to reduce stress, anxiety and foster positive health interactions.

Practical contributions

Medical professionals and educators can use these findings to teach healthcare providers about how to identify the types of uncertainty that arise in medical interactions and train them in effective uncertainty management tactics that can help relieve the precariousness of patient-provider interactions. In a profession that is constrained by systemic barriers, medical professionals can use this study as a guide on ways to manage uncertainty and specific tactics

that can be enacted to find medical answers, build relationship-centered interactions, and reduce patient reluctance. The findings of this project were used to create a one-page graphic that providers can use as a reference to manage relational and medical uncertainty in a time sensitive manner. By highlighting communication-related uncertainty management tools, this paper attempts to reduce ambiguity, burnout, miscommunication, and skepticism in healthcare settings.

Limitations

This study has several limitations. First, the current study is geographically confined to the state of Montana and does not necessarily provide insight into geographically diverse experiences of uncertainty. A sample bias is likely, due to the geographical constrains in this study; uncertainty and uncertainty management strategies may be adopted and experienced differently depending on geographical locations. Second, participant demographics overall were homogenous with a few exceptions, skewing female and white. Therefore, there is an overall lack of gender and racial representation in this population. Finally, due to the sensitivity of discussing uncertainty, participants in this study may have been reluctant to recall experiences in which they felt uncertain. Due to the possibility of a social desirability bias, readers should be aware of potential assumptions and behaviors that were not discussed that can arise due to relational uncertainty.

Conclusion

The current study provides a useful framework for understanding the role of uncertainty in patient-provider interactions and how uncertainty can impact the communication and behavior healthcare providers choose to enact. Medical and relational uncertainty are prominent in healthcare interactions but are experienced differently and should be managed differently. Results indicate that depending on the type of uncertainty experienced, communicative behaviors

should be action-oriented or connection-oriented i.e. aimed at either finding answers or building relationships. Clarifying the experience and definition of both medical and relational uncertainty gives medical professionals, scholars, and educators the ability to improve the support, communication, and treatment of patients. Since uncertainty is subjective, hidden and looked down upon, medical professionals and scholars can begin taking steps towards recognizing, addressing, and reducing uncertainty in healthy ways.

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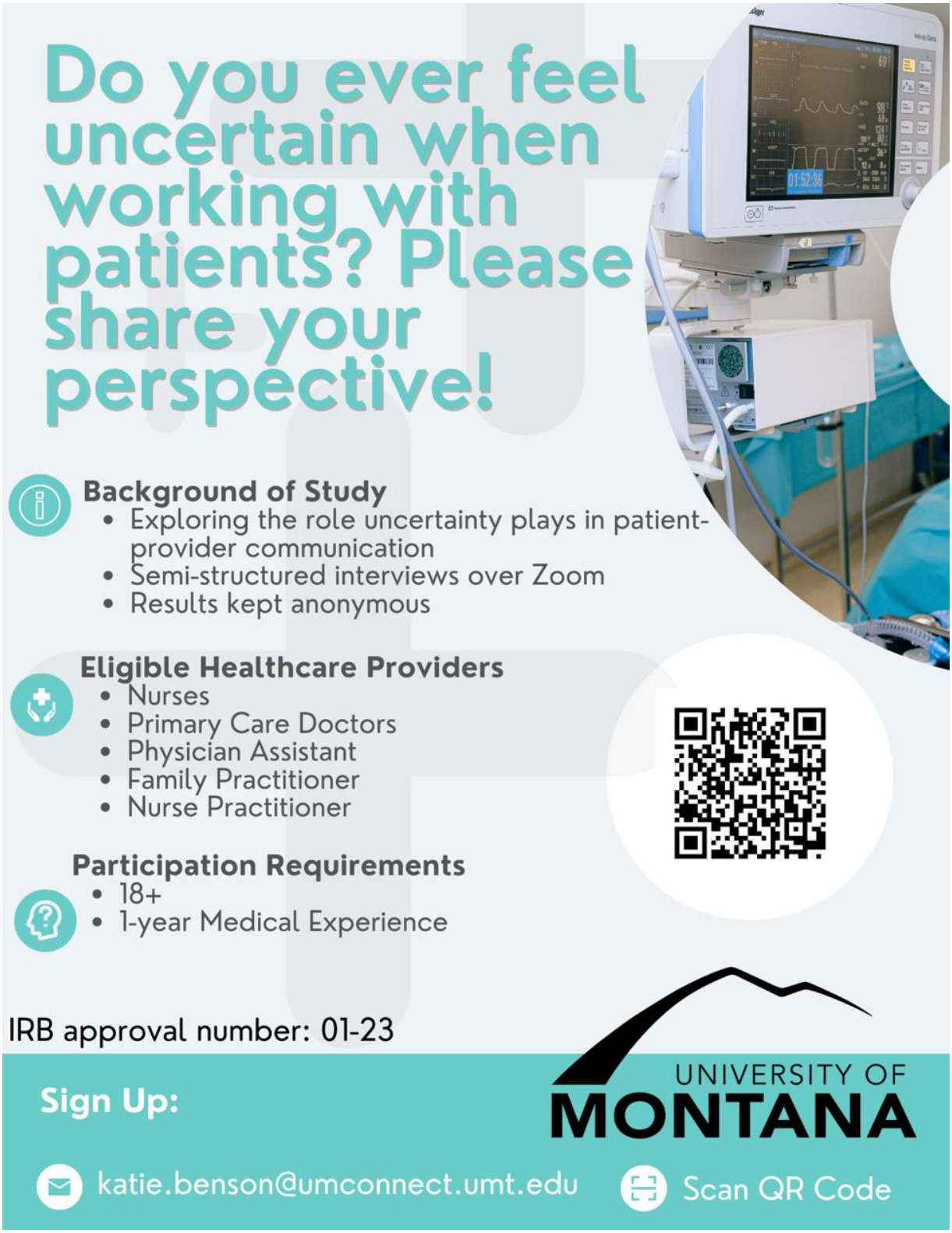
Appendix A: Recruitment Flier



Appendix B: Recruitment Language (email)

Hello, my name is Katie Benson. I am currently a second-year graduate student at the University of Montana in the Communication Studies Department. For my thesis project, I am studying how healthcare providers manage uncertainty when interacting with patients, and how uncertainty may influence healthcare providers communication behaviors. As part of this project, I am looking to interview healthcare providers in Montana who are willing to talk about their experience with uncertainty in healthcare interactions. I am looking for participants who meet the following criteria:

a. healthcare providers who work in a hospital, private practice, or clinical setting;
b. have the job title of nurse, primary-care doctor, physician's assistant, family practitioner or nurse practitioner;
c. are 18 years of age or older; and
d. have at least one year of medical experience

If you fit these criteria and are interested in participating, please email katie.benson@umconnect.umt.edu or scan the QR code located on the flier. Upon completion of the Qualtrics survey and consent form, I will send you a link to schedule a Zoom interview at your earliest convenience.

It is my goal to gain an understanding of how healthcare providers experience uncertainty and examine the ways uncertainty impacts patient-provider communication. Results from this study will be used to establish uncertainty management communication strategies to increase effective patient-provider interactions. Thank you for your participation. Feel free to share this post with individuals who may qualify for this study and contact me via email if you have questions: katie.benson@umconnect.umt.edu.

Appendix C: Participant Demographic Survey and Informed Consent

Study Title:

Montana Healthcare Provider Study

Investigators:

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Faculty Supervisor: Dr. Heather Voorhees, Professor of Communication Studies, University of Montana

Purpose:

The purpose of this study is to examine the phenomenon of provider uncertainty that arises in medical encounters. We aim to qualitatively investigate how healthcare providers communicatively manage their uncertainty when interacting patients. Participants must be over the age of 18 and working in traditional medical practices.

Procedures:

You will be asked a series of questions regarding your experience working in the healthcare field with patients. The interview will occur over Zoom or in person, whichever is convenient for participant and the researcher. The session will last approximately 45 minutes. Your responses will be recorded and transcribed with identifying features being excluded from the data to ensure confidentiality.

Risks/Discomforts:

Answering certain questions may cause you discomfort or bring back upsetting memories. You are allowed to skip or refrain from answering any question at any point in time.

Benefits:

There is no compensation for participating in this study.

Confidentiality:

Your interview data will be kept confidential and will not be released. The recording will be transcribed without any information that can lead to identification. The recording will be disposed of after analysis is complete.

By signing below, you agree to allow the researcher to record your interview and to allow the excerpts from the transcription to be included in this studies analysis…

_____

Voluntary Participation/ Withdrawal:

Your decision to take part in this research study is entirely voluntary.

You may refuse to take part in or withdraw from the study at any time without penalty or loss of benefits to which you are entitled. You may be asked to leave the study for any of the following reasons:

1. Failure to follow the project's directors' instructions.
2. The study is terminated.

Q1: How older are you?
Q2: What gender do you identify as?
Male
Female
Non-Binary
Other
Q3: What is your race?
Q4: What city in Montana do you work in?
Q5: What is your occupational role/title?
Q6: How long have you worked in the healthcare field?
Q7: Please include your email below. Upon completion of this form the researcher will be in contact within 24 hours via email with a link to schedule an interview time.

Appendix D: Interview Guide

Disclaimer/Consent:
Hello! Thank you for being willing to meet with me today. Before we get started, I would like to ask for your consent to record this interview. The recording will be used to review the interview to ensure we are true to your words in our report. The interview and transcriptions will not be viewed by anyone other than me or other members of this project.

All the details from this project will remain confidential unless discussed otherwise. I will be using quotes from the interview today to establish themes regarding healthcare providers experiences. Your name and identifying features will not be used in order to ensure confidentiality. If I am asked to identify participants, I will deny.

At any point in this interview, you as a participant are allowed to stop this interview at any point in time without repercussions. You may also ask for clarification of any questions or may refuse to answer any question.

Any questions before we begin?

First, I would like to collect some demographic information:

_____ What gender do you identify as?
_____ How long have you been in the healthcare field?
_____ What is your age?
_____ What is your race?
_____ What town do you work in?

Question 1:

To get started, can you tell me about a time when you were giving an uncertain diagnosis to a patient. What did you do and why did you do it?

Question 2:

What happens when a patient is unable to explain the information that you need to make a diagnosis?

Follow-up: What strategies do you use to get more information from a patient or to help them explain the information you need?

Question 3:

When meeting a patient for the first time, how do you decide to engage with that patient?

Follow Up: What kind of communication do you try to use to get more information to relieve uncertainty?

Question 4:

Tell me about a time when you suspected a patient was not understanding their medical diagnosis. What did you do?

Question 5:

Tell me about a time when you suspected a patient could not afford a certain treatment. What did you do?

Question 6:

In what ways does your relationship with a patient change when you have worked with them over an extended period?

Follow up: What did you do in order to create this type of relationship?

Question 7:

Thinking back on all your experience in healthcare, can you tell me about a positive and memorable experience you had with a patient? What made it memorable and positive for you?

Ending:

Before we stop the recording is there anything you feel like we missed throughout this interview, or you would like to tell me about?

Thank you for your time today! I appreciate you being willing to discuss your experiences in healthcare

Appendix E: Results Table

Table 2		
Qualitative Themes for Medical Uncertainty		
How providers communicate their uncertainty to patients		
Code	Definition	Examples
Offering multiple explanations	Telling patients a few possible medical outcomes	"I generally approach the patient and say, you know, it could be X, Y and Z, as a possible cause of your kidney problem. I think its most likely to be, let's say X, but it would require doing an invasive procedure like a kidney biopsy to really make that determination"
Transparency with patients	Admitting lack of medical answers and inconclusive medical results	"When you're faced with uncertainty, I like to be very transparent with the patient and say, you know, I'm not clear what the underlying cause is"
How providers manage their medical uncertainty		
Code	Definition	Examples
Laying out a plan of action	Discussing further testing or medical examinations	"I sort of told them my opinion was that I felt like we should try to attach the most likely possible first, while also making a plan to make sure that we could clarify the diagnosis down the road"
Consulting other medical professionals	Talking to other healthcare professionals to gain information, testing, answers	"So, we went and did the biopsy and it showed kind of some unusual findings which again, didn't really give use a definitive cause of it. It just basically showed a pattern which could have been caused by ten things. Then we had uncertainty about which of those ten other things could have caused this. So, we ended up then consulting other specialists."
Asking open-ended questions	Answer-seeking behavior that allow participants to elaborate on answers	"I start off by saying you know what brings you here today, or what brings you here for this admission?"
Handing off care	Admitting to patients where scope of practice ends and scheduling them with specialized medical professionals	"I can tell you what the problem is. This mass and the fact that it's sort of communicating with your bladder, but I'm not going to be the one who ultimately makes the treatment decisions or in fact, performs some of the further diagnosis testing. So, it's sort of in the context of uncertainty. Also making my role clear as you know. I need to coordinate care to get you to the

		appropriate next step, but the appropriate next step is also not sticking with me."
How providers communicate to reduce patient medical uncertainty		
Code	Definition	Examples
Affirming non-life threatening	Telling patients that their medical conditions did not put their life in danger	"We just assure them that they have no life-threatening diagnosis"
Validating patients' feelings	Acknowledging the patients' feelings and communicating that they are acceptable and appropriate	"Kind of acknowledging the stress that sitting with that uncertainty was going to cause her, especially because of her fear that cancer was a possibility"
Scheduling follow-up	Scheduling a time to further discuss medical information	"If I have to go in and give a bad diagnosis or tell someone they have cancer, I always make a follow up call, usually the next day or let them sleep on it. Make sure they don't have any more questions."
Giving patients a take-home	Writing up an after-care summary report as a reference guide for patients to take with them after appointment	"I give everyone a take home. I give them my AVS (after visit summary) of everything we talked about so that they have something like, oh what did that guy talk about?"
Ways providers adopt communication to explain medical information to patients		
Code	Definition	Examples
Using Imagery	Using diagrams, pictures, models to help patients understand medical information	"We had in our office, we have this kidney like model that sits on the desk, and you can kind of point, Hey, this is the kidney. This is the part that does the filtering. That's the part that drains the urine. And the sometimes I'll write you know, get a piece of paper, jot out this is what's wrong with the kidney. This part of the kidney is having an issue. I do tend to use visuals, especially when reviewing blood results."
Making medical information personally relevant	Finding a hard outcome that patients care about to explain how medical diagnosis would impact patient hobbies or health condition	"Then I'll explain what it's for, and why the doctor thinks it's important and relate it to their diagnosis. And this is like going to help you with this."
Using simple terms	Using smaller words and language to make medical information easier to understand	"And I will say, like, you know, medicine often isn't really in English. And so, one of my jobs is to translate like cardiologist into English. I use like a lot of metaphors."

Integrating patients' family into care teams	Asking family to attend appointments or meetings to help coordinate patient care	"So, most of the time it involves getting family involved, somebody else's perspective, somebody else that can help break down the barriers that make it so that the patient doesn't want to believe that or doesn't want to see it or can't understand it. So family is huge."

Table 3

Qualitative Themes for Relational Uncertainty

Code	Definition	Examples
Providing resources to patients	Telling patients about funding, medical assistance programs and other recourses aimed at reducing barriers and costs	"So, I always recommend the app. The GoodRx. And then other the other thing is you can often apply for drug assistance with some of the companies for patients who need resources and then other things like access to specialty care. So, you try not to burn out your resources, but you know, you talk to them and try to get them in for the best services."
Devoting time to learn about patients' story	Intentionally extending medical examinations with patients to learn about their background and socioecological factors	"I would say the number one thing that most of my patients value more than anything else is just time and the opportunity to sit down and be heard even if you really don't have time. I think sometimes things that we talk about like talking about nonmedical things first, asking open-ended questions giving them two minutes to just talk before you bust in and start asking all your questions. I think we have lost sight of that. People factor in medicine and the fact that the relationship is really important"
Looking past reserved patient behavior	Treating patients friendly and appropriately not matter how they treat the provider	"So, I think some of them will test the waters with you, some of them will come in and they'll be really reserved and they kind of look you up and down and not smiling and just kind of like ugh great here we go. And again, it's just ignoring that, moving on, being as friendly as possible."
Changing non-verbal behavior	Adopting behaviors such as eye-contact or sitting down to be relationship-centered, less authoritative and more open	"I tried to do it on purpose by turning away from the computer and you know, kind of look at them. Listening intently and asking questions when they're talking about what they're telling me."

Disclosing personal information	Telling patients personal information about family, geographical location, experiences, or background	"My technique is usually to reveal some personal information about myself, what I find interesting, what my family life looks like. Just as a way of breaking the ice with the patient. And then, you see that connection established much tighter when you do that."
Active listening	Giving patients talking turns to elaborate on lives, circumstances, and medical questions	"I think you can learn a lot from a person by listening. One of the interview techniques I always taught was when you ask a patient what are we here to discuss today or what's bothering you and give them a full minute. Like don't interrupt them. Let them talk for the whole minute before you ask a question or try to clarify something further."
“Connect before you correct”	Finding a commonality between patient and provider	"I didn't really know these people, but I have a philosophy that you connect before you correct. So, you have to kind of find ways to connect with people."

Appendix F: Quick Guide for Reducing Provider Uncertainty