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Motivational Factors in Adherence among Elderly with Diabetes and Hypertension

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Abstract
This qualitative study aims to explore the motivational factors in adherence among the elderly with diabetes and hypertension from the perspectives of patients and health professionals in China. Semi-structured face-to-face interviews were conducted. Thematic analysis of the interview transcripts unveiled eight master themes, including vicarious experiences, health beliefs, self-efficacy, feedback on health outcomes, the desire for improved health and longevity, understanding of diseases, perceived personal deterioration in health conditions, external regulation, and support. This study emphasizes the need for comprehensive strategies that align with the motivations of older individuals facing the dual challenges of diabetes and hypertension in China.

Keywords: Motivations; health management; hypertension; diabetes

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1.0 Introduction

The co-occurrence of hypertension and diabetes among the elderly has emerged as a significant focal point within the realm of public health. Effective health self-management strategies, encompassing medication adherence and adopting healthy lifestyle practices, are paramount in addressing these chronic conditions. Notwithstanding the acknowledged clinical benefits associated with such approaches, the research underscores the prevalence of inadequate patient adherence and involvement in health self-management endeavors across China (Wang et al., 2019). This issue garnered attention at the fifth China Chronic Disease Conference in 2015, where apprehensions were voiced regarding the low adherence rates among individuals contending with chronic illnesses.

The success of these health self-management strategies is contingent upon overcoming multifarious barriers to adherence (Hill et al., 2022; Phino et al., 2021). One of the factors influencing continuous adherence is a robust sense of motivation. Motivation is central to enhancing adherence (Phino et al., 2021). Hill et al. (2022) emphasizes the importance of understanding motivational factors to empower older individuals for improved self-care and indicates that motivational factors may include intrinsic factors and extrinsic factors. Understanding these motivational factors is critical in preventing complications, formulating tailored educational materials, and prioritizing interventions that empower older individuals for enhanced self-care.

Recognizing this critical interplay between motivation and health outcomes, our study aims to delve into the motivation factors that drive older individuals with diabetes and hypertension to initiate and sustain adherence to self-management strategies and lifestyle modifications in China. Through an exploration of these motivational factors, our research aims to identify the underlying determinants

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of adherence behavior among older people with diabetes and hypertension. This study will provide insights to guide the creation of customized educational resources and interventions tailored to the identified motivational factors in adherence, with the goal of enhancing health outcomes.

2.0 Literature Review

The demographic landscape of China, as revealed by the 2020 seventh census, spotlights a significant cohort of individuals aged 60 and above, constituting 18.70% of the total population. Within this demographic, an alarming estimate of 12 million older individuals grapple with the dual challenge of diabetes and hypertension (Liu et al., 2013), precipitating severe complications and a palpable decline in their quality of life. Beyond the personal toll, these conditions impose substantial economic burdens on individuals, caregivers, and the nation.

Managing diabetes and hypertension in older people necessitates multifaceted lifestyle modifications (De Boer et al., 2017), which extend beyond mere medical interventions. These modifications encompass dietary changes, emphasizing the importance of a well-balanced diet that caters to the specific needs of individuals with these chronic conditions (Tabish, 2007). Increased physical activity is another cornerstone, with tailored exercise regimens to improve cardiovascular health and metabolic function. Habit adjustments, such as breaking sedentary patterns and cultivating health-promoting routines, further contribute to holistic well-being (Charchar et al., 2023). Multifactorial interventions have yielded the most positive outcomes (Ried Larsen et al., 2019).

A meta-analysis indicates that the positive outcomes achieved decline after a trial ends, and few patients sustain lifestyle modifications (Poolsup et al., 2013). To prevent disease relapse, maintaining behavioral changes is crucial. Adherence to lifestyle interventions presents a particular challenge for future programs (Pinho et al., 2021), while Ried Larsen et al. (2019) highlighted the need for "further studies on maintaining lifestyle changes." Adherence is defined as "*…the extent to which a person's behavior—taking medication, following a diet, and/or implementing lifestyle changes—aligns with agreed recommendations from a healthcare provider…*"(Paulter et al., 2020: p.2)

Tan et al. (2022) found that health-related motivations are determinants of self-care behavior for the prevention of hypertension in a Malaysian community. Korkiakangas et al. (2011) suggested that adults with T2D experienced many meaningful motivators. Although factors influencing hypertension or diabetes self-care behavior have been examined previously in patient populations, they have not been assessed among older adults with both diabetes and hypertension. This study provides valuable insights for healthcare providers and policymakers seeking to design targeted interventions to improve adherence and ultimately enhance health outcomes among this demographic.

3.0 Methodology

This study utilizes a qualitative method to explore the motivational factors in adherence among older adults with diabetes and hypertension in China. Semi-structured face-to-face interviews were conducted with older individuals (OP) and health professionals (HP) from Xinyu City, Jiangxi Province, China. Purposive sampling techniques were utilized to select participants, ensuring a comprehensive examination of experiences and attaining data saturation, as advocated by Saunders et al. (2017) and Neubauer et al. (2019). Inclusion criteria for older participants encompassed individuals of Chinese nationality aged between 60 to 80 years, diagnosed with primary hypertension and type 2 diabetes mellitus (T2DM), proficient in the Chinese language, achieving a score of 24 or higher on the Mini-Mental State Examination (MMSE), and demonstrating independence in daily activities. Health professionals were mandated to possess at least two years of experience in hospital settings, engage in hypertension or diabetes rehabilitation and education for no less than two years, and exhibit proficiency in the Chinese language.

Each participant underwent semi-structured interviews involving open-ended questionnaires, which were digitally recorded and lasted 45 to 60 minutes. The verbatim transcription of these interviews was meticulously carried out, and thematic analysis was conducted using NVivo software, following the framework outlined by Braun & Clarke (2006) across six phases. Ensuring the study's trustworthiness included peer debriefing, member checking, and consensus among researchers to address discrepancies. Moreover, quotes representing the identified themes were rigorously translated from Chinese to English through both forward and backward translation methods. Ethical standards were strictly followed, with approval from the Research Ethics Committee of Universiti Teknologi MARA, and informed consent was obtained from all participants after a comprehensive explanation of the study's objectives and methodology.

4.0 Findings

Eight OPs, comprising four males and four females, along with ten HPs, including three males and seven females, were engaged in the study through interviews. Thematic analysis of the interview transcripts unveiled eight master themes, including vicarious experiences, health beliefs, self-efficacy, feedback on health outcomes, the desire for improved health and longevity, understanding of diseases, perceived personal deterioration in health conditions, and external regulation and support.

Verbal quotes from participants were utilized to substantiate findings while maintaining participant anonymity. The resultant master themes are succinctly summarized in Fig 1, elucidating the motivational factors in adherence among elderly individuals confronting hypertension and diabetes.

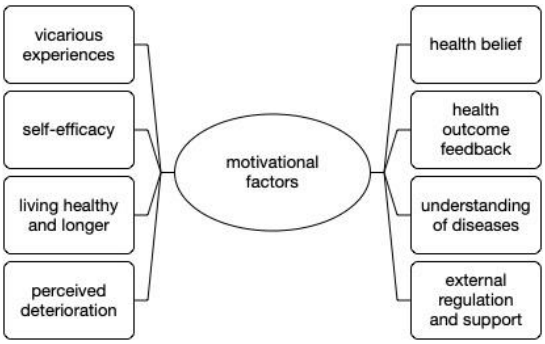

Fig 1: Summary of master themes about motivational factors among elderly individuals with hypertension and diabetes

4.1 Vicarious experiences

During the interviews, three elderly patients mentioned that vicarious experiences were the reason why they had good adherence. One participant of older people reported:

"Two years before retirement, a close colleague of mine died of a heart attack. This incident touched me and gave me a healthy wake-up call. I think this incident was a very important event in transforming my health perspective." (OP3, male)

Another participant added:

"Some patients do not pay attention to control; there will be itching and other complications; I'm trying to control my body from these bad situations."(OP5, female)

Another participant further shared her story of her husband:

"My husband is a diabetic; he did not pay attention to diet and did not exercise. Therefore, blood sugar control was not good. A few years ago, he had appendicitis, and the wound never healed after the operation, but he was not taken seriously or hospitalized and then died.I don't want to be like him."(OP4, female)

4.2 Health beliefs

Some participants mentioned health beliefs as the motivational factor. One older participant said:

"I know that the only way I can be healthier is to live a healthy lifestyle. I now feel uncomfortable when I eat sweet, oily foods; perhaps the idea that 'these things are bad for my health' has been ingrained in my mind"(OP1, female)

Another health professional participant added,

"Clinically, I often see patients with health awareness and beliefs have better compliance and adherence. Thus, the key point to improve adherence for elderly patients is to improve their perception and health beliefs."(HP7,female)

4.3 Self-efficacy

Self-efficacy is another motivational factor. One older participant reported:

"The body is our own; I think it mainly depends on ourselves; you must be willing to get health knowledge and obey it.I know about the disease and believe I can manage it, which I think is the most important reason I can stick to a healthy lifestyle."(OP4,female)

Another health professional participant described:

"Some patients have good adherence while some have poor adherence. It mainly depends on personal self-discipline"(HP10, female)

4.4 Feedback on health outcomes

Feedback on health outcomes also affects adherence. One older participant said:

"I often measure my blood sugar. When I see the result is good, I am very happy. Sometimes, after eating something sweet, my blood sugar will rise to 11 or 12. Therefore, I pay special attention to my diet and resolutely refuse to eat anything that cannot be eaten"(OP3, male)

Another health professional participant mentioned:

"If the elderly individuals see a certain effect on health outcome, they will have better adherence. If the treatment effect has not been good, he will not have confidence and even doubt you."(HP5, male)

4.5 Living healthy and longer

The desire for improved health and longevity is an important motivational factor that several participants mentioned. One older participant said:

"I want to live a healthy and quality life. The body is much more important than money. Living healthy and longer motivates me to exercise and eat healthily."(OP1, female)

Another older participant further added:

"No special strategies, just because I want to live healthier."(OP4, female)

4.6 Understanding of diseases

The comprehension of diseases is pivotal as a motivational factor driving adherence behaviors. An older participant reported:

"I always insist on taking my medicine every day. I know the harm of high blood pressure and high blood sugar, and there are many complications."(OP6, male)

Another health professional participant further mentioned:

"I think those patients who have poor adherence may still not have enough understanding of the disease and do not know the consequences that the disease will bring to him."(HP8, female)

4.7 Perceived deterioration

Perceived deterioration is another motivational factor in adherence that some participants mentioned. A participant expressed his perceived deterioration experience:

"Two years ago, I fell dizzy and fell in the bathroom. The examination found blood in my head, and I stayed in the hospital for a long time. I quit smoking and drinking after that. I used to drink and smoke before."(OP8,male)

Another participant further added:

"Once, I did not take antihypertensive drugs for a week, and my head hurt so much that my child took me to the hospital to measure my blood pressure at 180. The doctor said that we have to take this medicine for life and cannot stop it."(OP7,female)

4.8 External regulation and support

Some participants mentioned that external regulation and support are helpful to their adherence. One older participant said:

"I make appointments with friends every day to do exercises."(OP5, female)

Another older participant further mentioned:

"I always insist on taking my medicine every day. Because I live in an elderly apartment, every day the staff bring the medicine to me, and I will take it ."(OP2, male)

5.0 Discussion

Vicarious experiences are crucial in motivating adherence among elderly individuals dealing with hypertension and diabetes(Schmidt et al., 2020). By witnessing the health journeys of others, whether through negative outcomes like heart attacks or positive successes, older adults gain valuable insights into the consequences of non-adherence and the benefits of effective management. This first-hand understanding serves as a powerful catalyst for behavior change, prompting individuals to prioritize their health and adhere more diligently to treatment regimens (Carroll et al., 2012). These findings align with social cognitive theory (Luszczynska & Schwarzer, 2015), which emphasizes the influence of observational learning from one's social environment.

Health beliefs play a significant role as motivational factors in adherence among elderly individuals managing hypertension and diabetes. These beliefs shape individuals' perceptions of their health and influence their behavior toward adhering to treatment regimens (Alatawi et al., 2016). For some participants, a strong belief in the connection between lifestyle choices and health outcomes serves as a driving force for adherence. This highlights the need for interventions that target health education and promotion to foster positive health beliefs and behaviors among older individuals managing chronic conditions.

Self-efficacy, rooted in Bandura's Social Cognitive Theory (Luszczynska & Schwarzer, 2015), emerges as a critical motivational factor driving adherence among elderly individuals managing hypertension and diabetes. Participants' narratives highlight the significance of self-efficacy in fostering adherence behaviors, with those expressing confidence in their ability to acquire health knowledge and manage their conditions exhibiting higher adherence levels. This aligns with Bandura's assertion that individuals with

higher self-efficacy are more likely to initiate and sustain health-promoting behaviors (Schunk & DiBenedetto, 2020). Therefore, targeted interventions aimed at enhancing self-efficacy, such as patient education and cognitive-behavioral approaches, hold promise for promoting adherence in this population.

Participants' accounts reveal that observing positive health outcomes, such as stable blood sugar levels, elicits feelings of satisfaction and reinforces adherence behaviors (Mogre et al., 2017). Conversely, experiencing unfavorable health outcomes may evoke doubt and diminish confidence in the effectiveness of treatment regimens, potentially leading to non-adherence. Rooted in Bandura's Social Cognitive Theory (Luszczynska & Schwarzer, 2015), which emphasizes the role of feedback in shaping self-efficacy beliefs and behavior, these findings underscore the importance of tangible health indicators in driving adherence behaviors.

The desire for better health and longevity is a strong motivational force among elderly individuals managing hypertension and diabetes. Rooted in the Health Belief Model (Champion & Skinner, 2008), which suggests that individuals are driven to adopt health-promoting behaviors when they perceive a threat to their health, this desire underscores the intrinsic value placed on health by participants. It serves as a compelling incentive for adherence to treatment and healthy lifestyle habits, reflecting personal beliefs and values. By tapping into this intrinsic motivation, interventions can effectively promote adherence among this demographic, fostering sustained engagement in self-management practices.

The understanding of diseases emerges as a pivotal motivational factor driving adherence behaviors among elderly individuals managing hypertension and diabetes. Grounded in the Health Belief Model (Champion & Skinner, 2008), which posits that individuals are more likely to engage in health-promoting behaviors when they understand the severity and consequences of a health condition, participants' comprehension of their diseases influences their adherence decisions. Efforts to enhance disease comprehension through targeted educational interventions serve as a valuable strategy for promoting adherence and improving health outcomes (Booth et al., 2012).

The experiences of perceived deterioration recounted by participants underscore the significant impact of health crises on adherence behaviors(Yoon et al., 2023). These narratives align with theoretical frameworks such as the Health Belief Model (Champion & Skinner, 2008)and Self-Determination Theory (Deci & Ryan,2012), which emphasize the role of perceived susceptibility and severity in driving health-related behaviors. Thus, the findings highlight the critical role of perceived deterioration as a motivational factor in fostering adherence among elderly individuals with hypertension and diabetes, underscoring the need for tailored interventions that address these intrinsic motivators to promote better health outcomes.

The participants' accounts underscore the significance of external regulation and support as influential factors in fostering adherence among elderly individuals managing hypertension and diabetes. These narratives align with the Self-Determination Theory (Deci & Ryan,2012), which posits that both intrinsic and extrinsic motivators influence individuals' behavior. In this context, external regulation refers to behaviors driven by external factors, such as social support or accountability mechanisms. The participants' reliance on appointments with friends for exercise or the assistance of staff in managing medication reflects the influence of external regulation on adherence behaviors. By engaging in regular exercise with friends or receiving daily medication reminders from staff, participants benefit from external structures that provide accountability and support, reinforcing their commitment to adherence (Lidegaard et al., 2016). These findings highlight the importance of external regulation and support systems in promoting adherence among elderly individuals with chronic conditions, emphasizing the need for interventions that leverage external motivators to enhance health outcomes.

6.0 Conclusion& Recommendations

In conclusion, the findings of this study shed light on the complex motivational factors driving adherence among elderly individuals managing hypertension and diabetes. We have identified several key factors influencing adherence behaviors through the lens of various theoretical frameworks, including social cognitive theory, the Health Belief Model, and Self-Determination Theory. Vicarious experiences, health beliefs, self-efficacy, feedback on health outcomes, desire for better health, understanding of diseases, perceived deterioration experiences, and external regulation and support all play crucial roles in shaping adherence among this population.

The retrospective evaluation of this research highlights its contribution to the understanding of adherence among elderly individuals with chronic conditions, particularly in the context of hypertension and diabetes management. By exploring the nuanced motivational factors driving adherence, this study provides valuable insights for healthcare providers and policymakers seeking to design targeted interventions to improve adherence and ultimately enhance health outcomes among this demographic.

Tailored solutions and interventions should be developed to address the identified motivational factors influencing adherence among elderly individuals with hypertension and diabetes. These interventions should include storytelling and peer-led support groups to leverage vicarious experiences, targeted educational programs to enhance health beliefs and disease understanding, cognitive-behavioral interventions and skills-building programs to boost self-efficacy, regular feedback on health outcomes to reinforce positive behaviors, initiatives promoting healthy aging and longevity, support services to address perceived deterioration, and strengthened external regulation and support systems. By incorporating these strategies into educational resources and interventions, healthcare providers can empower elderly individuals to overcome barriers to adherence and achieve better health outcomes.

Moving forward, recommendations for improving the situation include the development of tailored interventions that address the identified motivational factors, such as promoting positive health beliefs, enhancing self-efficacy through education and skills-building programs, and leveraging external support systems. Additionally, efforts to improve disease comprehension and provide regular feedback on health outcomes can further support adherence behaviors among elderly patients.

However, it is essential to acknowledge the limitations of this study, including potential biases inherent in qualitative research and the specific context of the study population in Xinyu City, Jiangxi Province, China. Future research should aim to address these limitations

by conducting larger-scale studies in diverse geographic and cultural contexts to ensure the generalizability of findings. Furthermore, exploring the effectiveness of interventions targeting specific motivational factors identified in this study can provide valuable insights into best practices for promoting adherence among elderly individuals with chronic conditions.

This study contributes to understanding the motivational factors driving adherence among elderly individuals managing hypertension and diabetes. By identifying these factors and offering recommendations for intervention and further research, we aim to support efforts to improve adherence and ultimately enhance health outcomes for this vulnerable population.

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Paper Contribution to Related Field of Study

This paper will contribute to the field of health education and promotion.

References

Alatawi, Y., Kavookjian, J., Ekong, G., & Alrayees, M. M. (2016). The association between health beliefs and medication adherence among patients with type 2 diabetes. *Research in Social and Administrative Pharmacy*, 12(6), 914–925.

Booth, A., Lowis, C., Dean, M., Hunter, S., & McKinley, M. C. (2012). Diet and physical activity in the self-management of type 2 diabetes: barriers and facilitators identified by patients and health professionals. *Primary Health Care Research & Development*, 14(03), 293–306.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101.

Carroll, R., Antigua, J., Taichman, D. B., Palevsky, H. I., Forfia, P. R., Kawut, S. M., & Halpern, S. D. (2012). Motivations of patients with pulmonary arterial hypertension to participate in randomized clinical trials. *Clinical Trials*, 9(3), 348–357.

Champion, V. L., & Skinner, C. S. (2008). The health belief model. Health behavior and health education: *Theory, research, and practice*, 4, 45–65.

De Boer, I. H., Bangalore, S., Bénétos, A., Davis, A. M., Michos, E. D., Muntner, P., Rossing, P., Zoungas, S., & Bakris, G. L. (2017). Diabetes and Hypertension: A position statement by the American Diabetes Association. *Diabetes Care, 40*(9), 1273–1284.

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. Handbook of theories of social psychology, 1(20), 416-436.

Hill, A., Ellis, M. J., & Gillison, F. (2022). Qualitative exploration of patient and healthcare professional perspectives on barriers and facilitators to foot self-care behaviors in diabetes. *BMJ Open Diabetes Research & Care*, 10(6), e003034.

Korkiakangas, E., Alahuhta, M., Husman, P., Keinänen-Kiukaanniemi, S., Taanila, A., & Laitinen, J. (2011). Motivators and barriers to exercise among adult https://doi.org/10.1111/j.1471-6712.2010.00791.x

Lidegaard, L. P., Schwennesen, N., Willaing, I., & Færch, K. (2016). Barriers to and motivators for physical activity among people with Type 2 diabetes: patients' perspectives. *Diabetic Medicine, 33*(12), 1677–1685.

Liu, J., Zhao, D., Liu, J., Qi, Y., Sun, J., & Wang, W. (2013). Prevalence of diabetes mellitus in outpatients with essential hypertension in China: a cross-sectional study. *BMJ Open*, 3(11), e003798.

Luszczynska, A., & Schwarzer, R. (2015). Social cognitive theory. *Fac Health Sci Publ*, 225-51.

Mogre, V., Johnson, N., Tzelepis, F., Shaw, J. E., & Paul, C. (2017). Adherence to self-care behaviours and associated barriers in type 2 diabetes patients of low-and middle-income countries: a systematic review protocol. *Systematic Reviews*, 6(1).

Nelson, L. A., Wallston, K. A., LeStourgeon, L. M., Williamson, S., & Mayberry, L. S. (2018). Assessing barriers to diabetes medication adherence using the Information-Motivation-Behavioral skills model. *Diabetes Research and Clinical Practice*, pp. 142, 374–384.

Pinho, S., Cruz, M., Ferreira, F., Ramalho, A., & Sampaio, R. (2021). Improving medication adherence in hypertensive patients: A scoping review. *Preventive Medicine*, 146, 106467.

Poulter, N. R., Borghi, C., Parati, G., Pathak, A., Toli, D., Williams, B., & Schmieder, R. E. (2020). Medication adherence in hypertension. *Journal of hypertension*, *38*(4), 579-587.

Poolsup, N., Suksomboon, N., & Kyaw, A. M. (2013). Systematic review and meta-analysis of the effectiveness of continuous glucose monitoring (CGM) on glucose control in diabetes. *Diabetology & Metabolic Syndrome*, 5(1).

Ried-Larsen, M., Johansen, M. Y., MacDonald, C. J., Hansen, K. B., Christensen, R., Wedell-Neergaard, A. S., Pilmark, N. S., Langberg, H., Vaag, A., Pedersen, B. K., & Karstoft, K. (2019). Type 2 diabetes remission 1 year after an intensive lifestyle intervention: A secondary analysis of a randomized clinical trial. *Diabetes, Obesity and Metabolism,* 21(10), 2257–2266.

Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., & Jinks, C. (2017). Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & Quantity*, 52(4), 1893–1907.

Schmidt, S. K., Hemmestad, L., MacDonald, C. J., Langberg, H., & Valentiner, L. S. (2020). Motivation and Barriers to Maintaining Lifestyle Changes in Patients with Type 2 Diabetes after an Intensive Lifestyle Intervention (The U-TURN Trial): A Longitudinal Qualitative Study. *International Journal of Environmental Research and Public Health,* 17(20), 7454.

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, 60, 101832.

Tabish, S. A. (2007). Is diabetes becoming the biggest epidemic of the twenty-first century? *International Journal of Health Sciences*, 1(2).

Tan, P. P. S., Sandhu, R. S., Zain, S. M., Hall, D. A., Tan, N. C., Lim, H. M., Daud, F., & Pung, Y. F. (2022). Health motivations and perceived barriers are determinants of self-care behaviour for the prevention of hypertension in a Malaysian community. *PLOS ONE*, 17(12), e0278761.

Wang, L. M., Chen, Z. H., Zhang, M., Zhao, Z. P., Huang, Z. J., Zhang, X., ... & Zhou, M. G. (2019). Study of the prevalence and disease burden of chronic disease in the elderly in China. *Zhonghua liu xing bing xue za zhi*, 40(3), 277–283.

Yoon, S., Kwan, Y. H., Yap, W. L., Lim, Z. Y., Phang, J. K., Loo, Y. X., Aw, J., & Low, L. L. (2023). Factors influencing medication adherence in multi-ethnic Asian patients with chronic diseases in Singapore: A qualitative study. *Frontiers in Pharmacology*, 14.