

**BRIDGING COMMUNICATION GAPS BETWEEN PHYSICIANS AND
PATIENTS TO IMPROVE MEDICATION ADHERENCE**

by

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ABSTRACT

BRIDGING COMMUNICATION GAPS BETWEEN PHYSICIANS AND PATIENTS TO IMPROVE MEDICATION ADHERENCE

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Medication adherence is widely recognized as essential to good clinical outcomes, yet gaps persist even when patients and physicians both consider it important. This study examines why that gap endures in Japan, focusing on three forces that shape communication around adherence: the power dynamics of the patient–physician relationship, patient health literacy, and the role of digital tools.

Using a cross-sectional quantitative survey of 200 patients and 60 physicians — stratified across oncology and lifestyle-disease care — and interpreting the results through Shared Decision Making, health literacy theory, the WHO Multidimensional Adherence Model, and the Technology Acceptance Model, the study finds that the gap is driven not by a lack of motivation but by misaligned perceptions. Physicians rate adherence as highly important yet doubt that patients understand instructions, while patients rate their own adherence very highly. Short consultations, a reliance on verbal confirmation, and cultural norms of deference and harmony combine to keep non-adherence hidden — a state of "false alignment."

The thesis reframes adherence as a communication and interaction-design challenge rather than a problem of patient compliance, and proposes a Communication Design Framework spanning the interaction, organizational, technological, and policy levels to make adherence openly discussable and collaboratively managed.

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CHAPTER I: INTRODUCTION

1.1 Introduction

Communication between patients and physicians has undergone significant transformation over recent decades, driven primarily by the widespread accessibility of health information through the internet, digital media, and online health platforms. As patients are increasingly exposed to large volumes of medical content, ranging from evidence-based sources to informal or unverified information, their expectations regarding communication have evolved accordingly. Patients now anticipate more comprehensive explanations, greater transparency, and a more participatory role in decision-making processes. This shift has contributed to the emergence of a more informed and engaged patient population, while simultaneously reshaping traditional communication dynamics within clinical encounters. In parallel, the healthcare industry has responded to these changes by developing a growing market of tools and interventions, particularly digital technologies, aimed at enhancing patient–physician communication, improving patient engagement, and supporting self-management across the care continuum.

Despite these advancements, persistent communication challenges remain evident, particularly in the domain of medication adherence. Ineffective communication continues to have measurable consequences, both clinically and economically. Prior research has demonstrated that suboptimal communication can reduce treatment effectiveness by limiting patient understanding and engagement, ultimately

compromising adherence behaviors and health outcomes. Furthermore, poor adherence has been associated with significant medical and financial waste, including avoidable hospitalizations and inefficient resource utilization. While technological innovations and increased information availability have expanded the theoretical capacity for improved communication, these developments have not consistently translated into measurable improvements in adherence outcomes in real-world settings. This suggests that the underlying issue may not be a lack of information or tools, but rather how communication is structured, interpreted, and enacted within the clinical interaction.

This study focuses specifically on the communication gap between patients and physicians as it relates to medication adherence within the Japanese healthcare context. While patient–physician communication has been extensively examined in Western healthcare systems, there remains a relative paucity of research addressing how cultural, relational, and systemic factors shape communication processes in Japan. Comparative studies have identified meaningful differences between Japan and other healthcare systems, particularly in consultation length, conversational structure, and patterns of patient participation. For example, Japanese consultations are often characterized by shorter duration, more physician-led discourse, and less explicit patient engagement in decision-making. These structural and cultural features create a distinct communication environment in which assumptions about understanding and agreement may remain unchallenged. Given the growing emphasis on patient-centered care and Shared Decision Making globally, it is critical to assess how such approaches can be effectively adapted within the Japanese context.

Within this environment, patient–physician power dynamics remain a central and unresolved issue. Although patients have gained greater access to information and may possess higher expectations of involvement, clinical authority continues to reside predominantly with physicians. This asymmetry can complicate open communication, particularly in areas such as medication adherence where disclosure of non-compliant behaviors may be perceived as socially or relationally sensitive. Cultural norms in Japan including respect for authority, avoidance of confrontation, and an emphasis on maintaining interpersonal harmony, further shape how patients navigate these dynamics. As a result, communication may become implicitly constrained, with patients withholding uncertainties or deviations from prescribed treatment to preserve the relational equilibrium.

At the same time, patient literacy and digital engagement introduce additional layers of complexity. Patients may possess varying levels of health literacy, influencing not only their capacity to interpret medical information but also their confidence in engaging in dialogue with healthcare providers. While some patients leverage digital resources to enhance understanding, others may rely on incomplete or misinterpreted information, leading to independent decision-making outside the consultation setting. Digital tools designed to support adherences such as reminder systems or tracking applications have not been universally adopted and often function primarily as individual self-management aids rather than mechanisms to facilitate shared communication. Understanding how these factors—power dynamics, health literacy, and digital tool use—interact within the consultation is therefore critical to identifying practical and

culturally appropriate strategies to improve communication and support medication adherence.

1.2 Research Problem

The patient–physician relationship has historically been characterized by a clear asymmetry of knowledge and authority, with physicians holding primary responsibility for diagnosis, treatment decisions, and ongoing clinical management. This traditional structure has been reinforced by professional training, institutional norms, and societal expectations that position physicians as the central decision-makers within the healthcare system. Although patients’ access to medical information has increased substantially over the past two decades, particularly through digital channels such as online databases, social media, and health-focused platforms, this underlying distribution of authority has not fundamentally shifted. Instead, greater access to information has altered the informational environment surrounding the consultation without necessarily redefining the relational structure within it. As a result, patients often enter clinical encounters with pre-existing knowledge or assumptions, which may or may not align with physician guidance.

When patients experience uncertainty following medical consultations, they frequently seek supplementary information independently from external sources. While this behavior reflects increased engagement and agency, it can also introduce complexity into subsequent clinical interactions. Differences between physician recommendations

and externally sourced information may create tension, particularly if clinicians perceive such information as inaccurate or as implicitly challenging their expertise (Helft, 2003). Consequently, rather than facilitating open dialogue, expanded information access may, in some cases, lead to parallel interpretation processes in which patients privately reconcile differing viewpoints without explicitly addressing them during consultations. This dynamic can contribute to a form of informational fragmentation, where both parties operate with partially aligned but unarticulated understandings of treatment decisions.

At the same time, contemporary healthcare systems increasingly promote Shared Decision Making (SDM) as a normative model of care, emphasizing collaboration, mutual understanding, and active patient involvement in treatment decisions. In principle, SDM seeks to rebalance the traditional physician-centric model by encouraging the integration of clinical evidence with patient preferences, values, and lived experiences. However, despite widespread conceptual endorsement, the practical implementation of SDM remains uneven across clinical settings. This is particularly evident in the context of medication adherence, where decision-making extends beyond a single consultation and requires sustained behavioral engagement over time. While patients may formally agree with prescribed treatments during consultations, this agreement does not necessarily reflect full alignment in understanding or intention. In practice, patients may adjust medication regimens based on personal interpretations, symptom experiences, or perceived stability of their condition, often outside the visibility of the physician.

Existing research has examined key elements of this dynamic such as patient–physician relationships, health literacy, and digital health interventions, largely in

isolation. However, there remains a significant gap in understanding how these factors interact in shaping communication around medication adherence, particularly within non-Western contexts such as Japan. Cultural considerations play an important role in mediating these interactions. Norms such as respect for authority, avoidance of direct confrontation, and prioritization of relational harmony can influence how patients interpret medical advice and whether they feel comfortable seeking clarification or disclosing non-adherence. In such contexts, ambiguity or uncertainty may not be openly expressed, leading to communication patterns in which agreement is assumed but not fully examined. As a result, adherence-related discrepancies may persist not because patients undervalue treatment recommendations, but because deviations and uncertainties are not readily surfaced within routine clinical communication.

Furthermore, structural features of healthcare delivery, including limited consultation time, physician workload, and standardized consultation format may reinforce these patterns by constraining opportunities for deeper dialogue. Under time pressure, communication may prioritize efficiency and confirmation over exploration and clarification, increasing reliance on brief verbal exchanges that can mask underlying misunderstandings. At the same time, the growing presence of digital health tools introduces an additional dimension to this interaction. While such tools are often designed to support adherence through reminders, monitoring, or education, they are frequently positioned as individual self-management solutions rather than as integrated components of patient–physician communication. Consequently, they may fail to address

the relational and interactional aspects of adherence, instead reinforcing the separation between patient behavior and clinical oversight.

This research addresses these gaps by examining how patient–physician power dynamics, patient health literacy, and digital communication tools interact as an integrated system influencing medication adherence communication in Japan. By moving beyond single-factor explanations, the study seeks to provide a more comprehensive understanding of adherence as an outcome of intertwined relational, cognitive, and systemic processes. In doing so, it aims to identify practical and culturally congruent strategies for improving communication, enhancing transparency, and supporting more effective alignment between patient behavior and clinical intent.

1.3 Purpose of Research

The purpose of this research is to examine the underlying factors contributing to communication gaps between patients and physicians in relation to medication adherence within the Japanese healthcare context. While medication adherence has traditionally been framed as an issue of patient behavior or motivation, this study adopts a broader perspective, positioning adherence as an outcome shaped by interactional, cognitive, and structural dynamics within the clinical relationship. In this regard, communication is not treated as a secondary or supporting element, but as a central mechanism through which understanding, expectations, and decisions are negotiated. The study focuses on three

interrelated themes that together provide a comprehensive lens for understanding how adherence-related communication challenges emerge and persist in clinical practice.

First, the study investigates patient–physician power dynamics and their influence on communication patterns surrounding medication adherence. Despite increasing emphasis on patient involvement, clinical authority remains largely physician-centered, shaping how information is conveyed, interpreted, and challenged within consultations. Power asymmetry may limit patients’ willingness to raise uncertainties, disclose non-adherence, or question recommendations, particularly in environments where time constraints and hierarchical norms constrain dialogue.

Second, the study examines the role of patient health literacy, recognizing that patients differ in their ability not only to understand medical information, but also to engage in meaningful interaction with healthcare providers. Health literacy is therefore conceptualized as encompassing both cognitive and communicative capacities, influencing how patients interpret instructions, evaluate treatment relevance, and translating guidance into action.

Third, the study explores the potential role of digital tools and practical interventions in facilitating more effective, transparent, and supportive communication between patients and physicians. Rather than viewing digital health purely as a technical solution, the research considers how such tools are perceived, adopted, and integrated into the relational context of care, and whether they function to bridge or reinforce existing communication gaps. Through the integrated analysis of these three themes, the study aims to address the following six research objectives in a systematic and

interrelated manner. First, it seeks to identify the root causes of patient–physician communication gaps related to medication adherence in Japan, moving beyond surface-level explanations to uncover the underlying mechanisms driving misalignment. Second, it aims to examine how power dynamics, patient literacy, and digital tools shape the effectiveness of communication, with particular attention to how these factors interact rather than operate independently. Third, the study intends to assess the extent to which Japanese culture and broader societal norms influence patient–physician power dynamics, especially in relation to communication behaviors such as questioning, disclosure, and agreement. Fourth, the study evaluates the importance of patient literacy in supporting both understanding and adherence, recognizing that cognitive comprehension alone is insufficient if not accompanied by the ability to apply and communicate that understanding. Fifth, it seeks to synthesize insights on effective strategies for addressing communication gaps, drawing from both empirical findings and relevant theoretical frameworks to identify principles that can guide intervention design. Finally, the study aims to propose practical solutions to facilitate patient–physician communication and improve medication adherence, with a focus on approaches that are feasible within real-world clinical constraints and culturally congruent within the Japanese healthcare environment.

Collectively, these objectives reflect an effort to shift the analytical focus from individual patient behavior to the broader system of interactions in which adherence is embedded. By integrating relational, cognitive, and technological perspectives, the research aims to generate actionable insights that are not only theoretically grounded but

also practically applicable. In doing so, the study contributes to a more nuanced understanding of medication adherence as a co-constructed outcome of patient–physician communication, rather than a unidirectional measure of patient compliance.

1.4 Significance of the Study

Communication gaps between patients and physicians in relation to medication adherence have significant implications for both healthcare outcomes and overall system efficiency. At the clinical level, non-adherence is a major contributor to avoidable treatment failure, suboptimal therapeutic outcomes, and disease progression. Patients who do not fully adhere to prescribed regimens may experience reduced effectiveness of treatment, increased risk of complications, and diminished quality of life. At the system level, these effects translate into increased healthcare utilization, including avoidable hospitalizations, additional consultations, and the need for more intensive or corrective interventions. Furthermore, non-adherence contributes to substantial economic inefficiencies through medication waste and the misallocation of healthcare resources. These challenges underscore that improving adherence is not simply a matter of individual patient behavior, but a critical system-level priority that requires attention from clinicians, healthcare organizations, and policymakers alike.

Importantly, communication gaps play a central role in perpetuating these inefficiencies. When misunderstandings, unspoken concerns, or undisclosed deviations occur within patient–physician interactions, the result is often a misalignment between

prescribed treatment plans and actual patient behavior. This misalignment remains largely invisible within routine clinical practice, particularly in environments characterized by time constraints and reliance on verbal confirmation. Therefore, healthcare systems may operate under assumptions of adherence that do not reflect real-world behavior. Addressing communication gaps is therefore essential not only for improving individual patient outcomes, but also for enhancing the accuracy, efficiency, and effectiveness of healthcare delivery more broadly.

This study contributes to the existing literature by providing a context-specific examination of patient–physician communication in Japan, integrating perspectives on power dynamics, health literacy, and digital communication tools within a single analytical framework. While prior research has often focused on these elements independently, the present study adopts an integrative approach, recognizing that communication outcomes are shaped by the interaction of relational, cognitive, and systemic factors. By situating communication challenges within both cultural and structural contexts, the research moves beyond traditional explanations of non-adherence that emphasize information deficits or patient motivation. Instead, it highlights how interactional dynamics—such as hierarchical relationships, implicit communication norms, and limited opportunities for dialogue—contribute to the persistence of communication gaps even in settings with high levels of information availability.

The Japanese healthcare context provides a particularly relevant setting for this analysis. Cultural norms emphasizing respect for authority, avoidance of direct confrontation, and maintenance of relational harmony influence how patients engage with

healthcare providers and how communication unfolds within consultations. These norms do not inherently reduce patient engagement; rather, they shape the way uncertainties, concerns, and deviations are expressed—or left unexpressed. As a result, communication gaps may persist not because patients lack awareness of the importance of adherence, but because the social and relational costs of raising discrepancies are perceived as high. By explicitly incorporating these cultural dimensions, the study offers a more nuanced understanding of how communication patterns are embedded within broader societal and institutional frameworks.

The findings of this study are expected to inform a range of stakeholders, including healthcare professionals, policymakers, and industry actors seeking to improve medication adherence through more effective communication strategies. For clinicians, the research highlights the importance of creating interactional spaces that enable patients to express uncertainty and disclose non-adherence without fear of judgment or disruption to the therapeutic relationship. For policymakers, the findings suggest that structural factors—such as consultation time and care delivery models—play a critical role in shaping communication quality and should be considered in the design of healthcare systems and policies. For industry stakeholders, particularly those involved in developing digital health solutions, the study provides insight into why existing tools may fail to achieve widespread adoption or impact, and how they might be better positioned as facilitators of communication rather than as standalone self-management interventions.

Rather than proposing solutions that require fundamental cultural change or substantial restructuring of healthcare systems, this research emphasizes the importance

of practical, incremental interventions that align with existing relational norms and clinical constraints. Such interventions may include communication tools, structured prompts, or shared artefacts that make patient behavior more visible and easier to discuss within time-limited consultations. By focusing on approaches that are both feasible and contextually appropriate, the study offers actionable guidance for improving communication around medication adherence in a manner that is culturally congruent, operationally realistic, and supportive of sustained patient engagement. Ultimately, the research reinforces the notion that addressing adherence challenges requires not only better information or stronger patient compliance, but a fundamental shift in how communication is designed, facilitated, and embedded within everyday clinical practice.

1.5 Research Design

To achieve sufficient analytical breadth and practical relevance, this study adopts a quantitative research design supported by a structured review of existing literature. The quantitative approach enables the systematic identification of patterns, relationships, and differences in perceptions and behaviors related to medication adherence communication. Internet-based survey research was conducted to collect primary data from two key stakeholder groups within the healthcare ecosystem: patients and physicians. The patient sample comprises 200 respondents, while the physician sample includes 60 respondents, providing a balanced foundation for comparative analysis. The inclusion of both

perspectives is critical, as it allows for the examination of communication gaps not only as perceived by one group, but as an interactional misalignment between both parties.

To ensure analytical depth and contextual relevance, both respondent groups were stratified by disease type, thereby capturing variation across distinct clinical settings. Physician respondents were evenly divided between those treating oncology patients and those managing lifestyle-related chronic conditions such as hypertension and metabolic disorders. Similarly, the patient cohort was segmented into individuals undergoing cancer treatment and those receiving care for lifestyle-related conditions in primary care environments. This stratification was designed to reflect differences in treatment intensity, consultation structure, and patient engagement expectations, which may influence communication dynamics. By comparing these two clinical contexts, the study can assess whether communication challenges are consistent across settings or shaped by disease-specific factors.

Survey instruments were carefully designed to include mirrored questions for both patients and physicians, enabling direct and systematic comparison of their responses. These mirrored items focused on key dimensions such as perceived importance of adherence, level of understanding, actual adherence behaviors, and communication practices during consultations (see Table 1.1). This design approach enhances internal validity by ensuring that differences observed between groups are attributable to perception gaps rather than differences in question framing. In addition, the standardized survey format supports consistency in data collection and facilitates quantitative analysis across respondent segments.

A quantitative methodology was selected as it allows for efficient aggregation and comparison of responses across relatively large samples, supporting the identification of statistically meaningful trends and patterns. While qualitative methods—such as interviews or ethnographic observation—were considered for their ability to capture in-depth insights, they were deemed less suitable for the primary objective of this study, which is to examine systematic differences and generalizable patterns across populations. The quantitative approach also enables the integration of findings with existing empirical literature, strengthening the study’s analytical robustness.

The selected sample sizes were determined to balance practical feasibility with analytical rigor. While not intended to provide population-level generalization, the sample allows for clear directional insights and comparative analysis between subgroups, particularly across disease types and stakeholder perspectives. Moreover, the structured and replicable nature of the research design supports the potential for future studies to build upon these findings, either through expanded quantitative sampling or complementary qualitative investigation. Collectively, this methodological approach provides a robust foundation for examining communication gaps in medication adherence and generating actionable insights relevant to both clinical practice and healthcare system design.

Table 1.1 Quantitative Survey Research Design

<i>Research Method</i>	✓ <i>Internet Survey conducted by third party vendor</i>
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<i>Geography of Scope</i>	✓ <i>Japan</i>
<i>Research Period</i>	✓ <i>April 21, 2025 – June 11, 2026</i>
<i>Sample Size (n)</i>	✓ <i>Physicians 60</i> <i>(30 physicians treating cancer, 30 physicians treating life-style diseases)</i> ✓ <i>Patients 200</i> <i>(100 patients with cancer, 100 patients with life-style diseases)</i>
<i>Number of Questions</i>	✓ <i>15 questions</i> ✓ <i>Mirrored questions for both patients and physicians</i>

In addition to primary data collection, the study draws on a range of existing research to contextualize the findings and strengthen the overall analytical framework. This includes prior work conducted by the researcher (Liguori, 2016), as well as relevant academic and industry literature on medication adherence, patient–physician communication, and healthcare behavior. The integration of secondary sources serves multiple purposes. First, it provides a theoretical and empirical foundation against which the primary data can be interpreted, ensuring that observed patterns are not viewed in isolation but in relation to established knowledge. Second, it enables triangulation of insights, whereby findings from the survey data are compared with prior research to enhance the robustness and credibility of conclusions. Third, it supports the identification of consistencies and divergences across contexts, particularly in relation to cultural and

systemic factors unique to the Japanese healthcare environment. By combining primary and secondary data, the study reinforces both its internal validity and its relevance to broader academic and practical discussions.

At the same time, the study acknowledges several methodological limitations inherent in its design. The use of internet-based survey panels may introduce constraints related to sample representativeness and diversity, as respondents are limited to individuals who have access to and are willing to participate in online research platforms. This may result in certain patient or physician segments being underrepresented, particularly those with limited digital engagement or differing socio-demographic characteristics. In addition, the reliance on self-reported data introduces the possibility of response biases, including recall bias and social desirability bias. For example, patients may overstate their adherence levels or degree of understanding, while physicians may report practices that align with perceived professional expectations rather than actual behavior. These limitations are particularly relevant in the context of medication adherence, where discrepancies between reported and actual behavior are well-documented.

Despite these limitations, research design provides a sufficiently robust foundation for analyzing communication dynamics and generating meaningful insights. The structured nature of the survey, combined with the use of mirrored questions across patients and physicians, enables systematic comparison and identification of perception gaps. Furthermore, the integration of secondary research enhances the depth of

interpretation, allowing findings to be situated within both theoretical frameworks and prior empirical evidence.

Importantly, the objective of this study is not to provide precise population-level estimates, but rather to identify directionally consistent patterns, interactional dynamics, and underlying mechanisms that contribute to communication gaps in medication adherence. In this regard, the design is well-aligned with the study's exploratory and explanatory aims. The findings therefore offer valuable guidance for both academic inquiry and practical application, supporting the development of actionable, contextually appropriate recommendations aimed at improving patient–physician communication and ultimately enhancing medication adherence within the Japanese healthcare system.

1.6 Structure of the thesis

The thesis is structured into six chapters, each designed to build logically upon the previous section to develop a coherent and comprehensive analysis of patient–physician communication in relation to medication adherence. The following provides an overview of the objectives and key activities addressed within each chapter.

Chapter I presents the research introduction and establishes the foundation for the study. It outlines the broader background and context, including recent developments in healthcare communication and the growing importance of medication adherence. The chapter clearly defines the research problem, highlighting critical evidence gaps in existing literature, particularly in relation to communication dynamics within the

Japanese healthcare setting. It also introduces the research objectives, questions, and overall research design adopted to address these gaps. In addition, the chapter discusses the significance of the research, articulating both academic contributions and practical implications for healthcare stakeholders, including clinicians, policymakers, and industry participants.

Chapter II develops the theoretical framework underpinning the study through a comprehensive review of relevant literature. This chapter critically examines prior research on patient–physician relationships, Shared Decision Making, health literacy, and digital health tools, situating them within the context of medication adherence. It goes beyond descriptive review by identifying key limitations and gaps in existing studies, particularly the lack of integrated perspectives that consider relational, cognitive, and systemic factors simultaneously. The chapter concludes by synthesizing these insights into a conceptual framework that directly informs the research objectives and questions guiding this study.

Chapter III outlines the research methodology and justifies the chosen approach. It begins by reviewing a range of methodological options, including both qualitative and quantitative approaches, and evaluates their respective strengths and limitations in addressing the research problem. The chapter then provides a detailed rationale for selecting quantitative research design, supported by internet-based survey research surveys. It further explains the sampling strategy, survey design, and data collection processes, including the use of mirrored questionnaires for patients and physicians. In

addition, this chapter describes the analytical techniques applied to interpret the data, as well as the integration of primary findings with insights from existing literature.

Chapter IV presents the empirical findings of the study. It provides a structured overview of results derived from both the quantitative survey research and relevant existing evidence. The chapter systematically reports key patterns, trends, and differences identified across patient and physician responses, including variations by disease type and clinical context. Where appropriate, findings are supported by statistical indicators to demonstrate the strength and direction of observed relationships. This chapter remains primarily descriptive, focusing on presenting the data in a clear and organized manner without extensive interpretation.

Chapter V builds on the findings by providing in-depth analysis and interpretation. It first examines the overall results in a holistic manner, identifying overarching themes and patterns. The chapter then conducts a detailed analysis aligned with each research question, exploring how factors such as power dynamics, health literacy, and digital tool usage contribute to communication gaps. In addition, it critically assesses the implications of the findings in relation to the theoretical framework presented earlier. The chapter also addresses the limitations of the study, including considerations related to sample size, methodology, and generalizability, thereby ensuring transparency and academic rigor.

Chapter VI concludes the thesis by synthesizing the key insights generated throughout the research. It summarizes the main findings and articulates their implications for both theory and practice. This chapter highlights how the research

advances understanding of medication adherence as a communication and interactional challenge rather than purely a behavioral issue. It also provides practical recommendations for improving patient–physician communication within real-world clinical settings, with particular attention to cultural and structural considerations in Japan as well as a communication design framework for medication adherence specific for Japan. Finally, the chapter outlines areas for future research, identifying opportunities to extend and deepen the analysis through additional studies or alternative methodological approaches.

CHAPTER II: REVIEW OF LITERATURE

2.1 Introduction

Patient–physician communication has been widely recognized as a central determinant of healthcare quality, patient engagement, and treatment outcomes. Over recent decades, this communication context has evolved alongside increased patient access to health-related information through the internet and digital media. As patients become more informed and proactive, expectations regarding explanation, involvement, and dialogue within clinical encounters have expanded. These changes have contributed to the development of a growing healthcare market aimed at supporting communication, including digital tools designed to facilitate information exchange and patient engagement.

Despite these developments, communication challenges related to medication adherence remain persistent. Ineffective communication around adherence can undermine treatment effectiveness and negatively impact patient outcomes, even when clinically appropriate therapies are prescribed (Stewart, 1995). Medication non-adherence has also been linked to significant economic and environmental costs, including substantial medication waste (Chien, 2013). Empirical research demonstrates that while patients and physicians often share a general understanding of the importance of adherence, discrepancies frequently arise in how adherence-related information is communicated, interpreted, and acted upon.

This literature review examines existing research relevant to patient–physician communication on medication adherence through four interrelated thematic lenses. First, it will introduce Shared Decision Making (SDM), which is the most widely used model of patient-physician interaction. Second, it explores power dynamics within the patient–physician relationship and how authority, expertise, and role expectations shape communication patterns. Third, it reviews the concept of patient health literacy and its implications for understanding medical information and engaging in clinical dialogue. Fourth, it considers the role of digital tools in supporting or mediating communication related to medication adherence. Together, these strands of literature provide the theoretical and empirical foundation for examining communication gaps and identifying opportunities for improvement within the Japanese healthcare context.

2.2 Theoretical Framework

This study draws on multiple theoretical frameworks to explain why communication gaps related to medication adherence persist and how they may be addressed. Medication adherence is not solely a function of patient motivation or knowledge, but rather a multidimensional outcome shaped by relational, cognitive, and systemic factors. To capture this complexity, four complementary theoretical frameworks are employed: Shared Decision Making (SDM), health literacy theory, the World Health Organization’s Multidimensional Adherence Model, and the Technology Acceptance Model (TAM).

Shared Decision Making provides a relational framework for understanding how treatment decisions are negotiated between patients and physicians. It conceptualizes decision-making as a collaborative process grounded in information exchange, deliberation, and alignment between clinical evidence and patient values (Charles et al., 1997). Health literacy theory complements this view by focusing on patients' ability to access, interpret, and apply health information in meaningful ways (Nutbeam, 2000). Together, these frameworks highlight that effective communication depends not only on the availability of information, but also on patients' capacity and confidence to engage in dialogue.

The World Health Organization's Multidimensional Adherence Model situates medication adherence within a broader system of interacting influences, including patient-, therapy-, provider-, and system-level factors (WHO, 2003). Within this model, communication between patients and healthcare professionals is identified as a core driver of adherence outcomes. Finally, the Technology Acceptance Model explains how individuals evaluate and adopt digital tools based on perceived usefulness and ease of use (Davis, 1989). This framework is particularly relevant given the increasing availability of digital adherence-support solutions and their variable uptake in clinical practice.

Taken together, these theoretical perspectives provide an integrative lens through which patient–physician communication, power dynamics, patient literacy, and digital mediation can be examined as interconnected rather than independent phenomena.

2.3 Shared Decision Making (SDM)

Shared Decision Making (SDM) represents one of the most widely endorsed models of patient–physician interaction in contemporary healthcare, and its development provides an essential theoretical lens for understanding the communication dynamics examined in this study. The conceptual foundations of SDM are traceable to Emanuel and Emanuel’s (1992) identification of four models of the physician–patient relationship — paternalistic, informative, interpretive, and deliberative — each reflecting a different distribution of decision-making authority. The deliberative model, in which the physician actively engages the patient’s values through bidirectional dialogue, most closely prefigures the contemporary understanding of SDM. Charles, Gafni and Whelan (1997) formally defined SDM as a clinical process requiring the involvement of both physician and patient, bidirectional information sharing, the expression of patient treatment preferences, and the reaching of a jointly agreed decision. Charles, Gafni and Whelan (1999) subsequently refined this model, distinguishing SDM from informed consent and from patient-led decision-making alone, and emphasizing that genuine SDM requires active, reciprocal engagement rather than the unidirectional provision of information. Elwyn et al. (2012) advanced the operationalization of SDM through the Three-Talk Model, which organizes the SDM process into three sequential communicative stages: Team Talk, in which the physician establishes a collaborative orientation and signals that patient participation is welcome; Option Talk, in which treatment alternatives are explored with their associated benefits, risks, and uncertainties

in a form accessible to the patient; and Decision Talk, in which patient preferences are elicited, weighed, and incorporated into a mutually agreed decision.

The application of SDM to medication adherence requires an important conceptual distinction between two types of clinical decision. The first is the initial treatment decision — a bounded event occurring within or shortly after a consultation — in which SDM principles can be directly applied through information sharing, deliberation of options, and explicit agreement on a treatment plan. The second is the ongoing process of adherence, which unfolds over time, largely outside the consultation, and involves continuous patient interpretation and behavioral adaptation in the context of daily life (Charles, Gafni and Whelan, 1999). A patient may formally agree with a treatment plan during a consultation while leaving unaddressed the relational and cognitive conditions necessary for sustained medication-taking over weeks or months; without ongoing dialogue, patients may adjust medication independently based on symptom experience, perceived treatment stability, or personal judgement. Joosten et al. (2008), in a systematic review examining the effects of SDM on patient satisfaction, treatment adherence, and health status across chronic disease contexts, found that SDM was associated with improved adherence outcomes, but that the magnitude of this effect was contingent on the degree to which SDM was genuinely enacted within consultations rather than superficially approximated through pro forma information exchange. Frosch and Kaplan (1999) identified a further dimension: SDM tends to be adopted more readily among younger, more educated, and communicatively confident patients, highlighting

persistent structural inequalities in participatory capacity that are directly relevant to the communication and adherence gaps this study examines.

Despite widespread conceptual endorsement, the implementation of SDM in routine clinical practice remains uneven. Elwyn, Frosch and Kobrin (2015) identified a range of systemic, relational, and attitudinal barriers constraining SDM adoption in everyday settings, including time pressure, insufficient physician training in SDM communication, and institutional workflows that prioritize throughput efficiency over deliberative engagement. Critically, they noted that when SDM is selectively enacted or compressed under time pressure, patients may be left with formal agreement but incomplete understanding, increasing the likelihood of subsequent non-adherence. Joseph-Williams, Elwyn and Edwards (2014), in a systematic review of patient-reported barriers and facilitators to SDM across multiple healthcare systems, identified power asymmetry as among the most consistently cited obstacles: patients reported feeling uncertain about whether it was appropriate to raise concerns, and were reluctant to express disagreement with physician recommendations. The authors concluded that greater access to information does not equip patients with the confidence or relational agency to participate meaningfully in SDM — a finding that directly informs this study's conceptualization of health literacy as a communicative and relational capability rather than a purely cognitive attribute. These barriers are particularly acute in the Japanese healthcare context, where consultation times are among the shortest in the OECD, and Ohtaki, Ohtaki and Feters (2003) documented that Japanese clinical

consultations involve shorter duration, fewer patient-initiated questions, and less explicit exchange of patient preferences than comparable consultations in the United States.

Efforts to measure the quality of SDM within clinical encounters have produced several validated instruments that are directly relevant to the operationalization of SDM constructs in this study. The OPTION (Observing Patient Involvement in Decision Making) scale, developed by Elwyn et al. (2003), is an observer-rated instrument measuring the extent to which clinicians actively involve patients in decision-making through twelve coded behaviors, including option-listing, comprehension-checking, and preference-elicitation. Although the OPTION scale is primarily applied in research and training contexts requiring access to consultation recordings, its conceptual framework provides a practical operationalization of communicative behaviors that constitute SDM, and maps directly onto the interaction patterns examined in this study. The SDM-Q-9 (Kriston et al., 2010) is a nine-item patient self-report questionnaire measuring perceived SDM from the patient's perspective, covering information exchange, understanding of treatment options, involvement in decision-making, and the degree to which decisions reflected patient values. The SDM-Q-Doc (Scholl et al., 2012) is a parallel physician-version instrument using equivalently worded items, enabling direct comparison of physician and patient perceptions of the same clinical encounter. The paired architecture of these instruments — in which both parties rate the same interaction from their respective perspectives — closely mirrors the methodological approach employed in this study through its use of mirrored survey questionnaires across patient and physician respondents to identify perceptual gaps, as operationalized in Chapter III (Section 3.2).

The implementation and effectiveness of SDM are not culturally uniform, and the degree to which its principles can be enacted in routine practice is substantially shaped by prevailing societal norms around authority, communication, and interpersonal role expectations. Hofstede's (2001) cross-cultural framework provides empirical grounding for contextualizing this variation: Japan's Power Distance Index (PDI) score of 54 reflects an entrenched acceptance of hierarchical authority within institutional settings, in which the physician's professional status confers considerable interactional power that patients are socially discouraged from challenging. Of equal significance is Japan's Uncertainty Avoidance Index (UAI) score of 92, one of the highest values in Hofstede's international dataset, reflecting extreme societal discomfort with ambiguity and unresolved uncertainty. In a clinical SDM context, this combination creates conditions in which patients uncertain about their treatment options may nonetheless refrain from raising that uncertainty, because doing so would require acknowledging incomplete understanding in a hierarchical encounter where the relational cost of such disclosure is high. Joseph-Williams, Elwyn and Edwards (2014) found that patients in higher power-distance environments frequently self-constrain their participation in SDM, deferring to physician judgement not because they lack relevant preferences but because social norms discourage explicit challenge to professional authority. As Ohtaki, Ohtaki and Feters (2003) documented, Japanese consultations involve fewer patient-initiated questions and less explicit preference expression than Western counterparts, producing consultation profiles that are structurally less positioned to generate the intermediate outcomes —

patient understanding, self-efficacy, and felt support — upon which effective and sustained adherence depends.

Shared Decision Making thus provides an essential framework for understanding the patient–physician communication and adherence dynamics examined in this study. Its evolution from paternalistic models toward collaborative, preference-sensitive dialogue highlights the normative direction of contemporary healthcare communication. Its application to medication adherence reveals the critical distinction between formal agreement at the point of consultation and sustained behavioral engagement over the course of treatment — a distinction that is directly implicated in the communication gaps documented throughout this study’s empirical findings. And its uneven implementation — shaped by time constraints, power asymmetries, cultural norms, and patients’ communicative capacity — maps directly onto the structural and relational barriers evident in the Japanese healthcare context. The following sections of this chapter examine two further dimensions of this communication challenge: patient health literacy and the role of digital tools, both of which interact with SDM to shape the conditions under which adherence decisions are made, communicated, and sustained.

2.4 Power Dynamics between Physician and Patient

Power dynamics are a foundational feature of the patient–physician relationship and play a significant role in shaping communication patterns within clinical encounters. Traditional models of medical practice have positioned physicians as the primary holders

of expertise and decision-making authority, with patients occupying a more passive role. Early theoretical work sought to categorize this relationship through models such as paternalistic, informative, interpretive, and deliberative approaches, each reflecting different distributions of authority and responsibility (Emanuel and Emanuel, 1992).

Over time, healthcare systems — particularly in Western contexts — have increasingly advocated for reduced paternalism and greater patient autonomy. Scholars have argued for enhanced autonomy models in which power is more evenly distributed between physicians and patients, allowing for shared responsibility in decision-making (Quill and Brody, 1996). However, empirical evidence suggests that shifts toward shared authority are neither uniform nor complete. While patients may be more informed due to internet access, this informational empowerment does not always translate into greater confidence or efficacy within clinical interactions (Jacobson, 2007).

Research has shown that physicians may perceive patient-initiated information from external sources as a challenge to professional authority, potentially reinforcing hierarchical dynamics rather than alleviating them (Helft, 2003). Moreover, power is often exercised not explicitly, but through interactional structures such as time constraints, consultation flow, and implicit expectations regarding questioning and agreement. Studies examining physician perspectives highlight that the management of professional power is a conscious and ethically complex process, requiring reflection on how authority is communicated and shared during patient encounters (Nimmon and Stenfors-Hayes, 2016).

Cultural context further shapes how power dynamics are enacted and interpreted. Research conducted across diverse healthcare systems indicates that societal norms regarding hierarchy, respect for authority, and interpersonal harmony can influence patients' willingness to ask questions or disclose concerns (Adebayo, 2021; McDonald et al., 2012). Hofstede's (2001) cross-cultural framework provides empirical grounding for these observations: Japan's Power Distance Index (PDI) score of 54 reflects an entrenched acceptance of hierarchical authority within institutional settings — including clinical encounters — in which the physician's professional status confers considerable interactional power that patients are socially discouraged from challenging. Of equal significance is Japan's Uncertainty Avoidance Index (UAI) score of 92, one of the highest values in Hofstede's international dataset, reflecting extreme societal discomfort with ambiguity and unresolved uncertainty. In a clinical adherence context, this combination is highly consequential: patients uncertain about medication instructions may refrain from seeking clarification precisely because acknowledging incomplete understanding in a hierarchical encounter carries significant relational cost. Hall's (1976) characterization of Japan as a high-context communication culture — in which meaning is conveyed through contextual cues, silence, and relational signals rather than explicit verbal expression — further clarifies why patient silence in Japanese consultations may function as a culturally accepted signal of agreement rather than a transparent indicator of genuine comprehension. Together, these cultural dimensions create a communicative environment in which non-adherence is expressed not through open dialogue but through private behavioral adaptation, remaining undisclosed within routine clinical consultations

and thereby sustaining the patient–physician communication gap that this study examines.

2.5 Patients Literacy in Understanding

Health literacy is a critical determinant of patients’ ability to engage effectively in healthcare interactions and adhere to prescribed treatment regimens. It is commonly defined as the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (Safeer and Keenan, 2005).

Early conceptualizations of health literacy focused primarily on functional skills such as reading and numeracy; however, subsequent frameworks have expanded the concept to include interactive and critical dimensions (Nutbeam, 2000). These developments reflect a broader recognition that health literacy encompasses not only the ability to read and comprehend medical information, but also the capacity to engage in meaningful clinical dialogue, critically evaluate health-related evidence, and apply knowledge to treatment decision-making within complex and often time-constrained clinical environments.

Functional health literacy refers to the basic comprehension of written and verbal health information. Interactive health literacy encompasses more advanced cognitive and social skills that enable active participation in healthcare encounters, including the ability to extract information from different communication channels and apply it under professional guidance. Critical health literacy involves the ability to evaluate information, question clinical recommendations, and exercise greater autonomy in health-related

decisions (Nutbeam, 2000). Empirical research consistently demonstrates that limited health literacy is associated with poorer health outcomes, increased hospitalization, and reduced medication adherence (Nutbeam and Lloyd, 2021). Paasche-Orlow and Wolf (2007) proposed a causal pathways model in which health literacy influences health outcomes through several interconnected mechanisms, including access to care, quality of patient–provider interactions, and the capacity for self-care. This model positions health literacy not as an individual deficit to be corrected through education alone, but as a systemic determinant of whether patients can effectively participate in adherence-related communication and decision-making.

Building on these foundational frameworks, Sørensen et al. (2012) developed a more comprehensive integrated model of health literacy — the Health Literacy Survey–European Union (HLS-EU) model — through a systematic review and synthesis of twelve existing definitions and conceptual frameworks. Their model reconceptualizes health literacy as encompassing four core processing competencies: accessing, understanding, appraising, and applying health information, applied across three distinct life domains — healthcare, disease prevention, and health promotion. This twelve-dimensional matrix moves beyond Nutbeam’s (2000) three-tier framework by explicitly incorporating appraisal — the capacity to judge the relevance, reliability, and quality of health information — as a prerequisite for informed action. The inclusion of appraisal is particularly important in contexts where patients are increasingly exposed to multiple, competing sources of health information through digital media, as they must not only understand but critically evaluate what they encounter. For the present study, the Sørensen

et al. (2012) model provides a theoretically richer basis for interpreting how patients in Japan navigate information about their medications — a process that extends beyond the clinical consultation to include independent information-seeking, private interpretation, and self-directed modification of medication use in daily life.

The proliferation of digital health information introduces a further dimension of health literacy that requires specific theoretical attention. Norman and Skinner (2006) defined eHealth literacy as the ability to seek, find, understand, and appraise health information from electronic sources, and to apply that knowledge to address or solve a health problem. Operationalized through the Lily Model, eHealth literacy integrates six interrelated competencies: traditional literacy, health literacy, information literacy, scientific literacy, media literacy, and computer literacy. The composite nature of this framework reflects the multiple skills required to engage meaningfully with online health information — and, critically, to distinguish credibility from unreliable sources. eHealth literacy is directly relevant to the present study's examination of digital adherence support tools. Patients who access health-related information through the internet, social media, or mobile platforms may possess varying degrees of competency in evaluating that information, leading to divergent interpretations of medication guidance that diverge from clinical intent. When eHealth literacy is limited, digital information-seeking may reinforce rather than resolve existing misunderstandings about medication purpose, dosage, or the consequences of non-adherence. Moreover, eHealth literacy has been identified as an important moderator of the effectiveness of digital health interventions: tools designed to support adherence may be selectively underutilized, misapplied, or

interpreted in ways inconsistent with their intended function among patients who lack the skills to navigate or critically evaluate digital health content (Norman and Skinner, 2006).

In the context of this study's focus on Japan, the epidemiological evidence on health literacy levels is of relevance to understanding the patterns of incomplete understanding and private medication adjustment documented in the survey findings. Nakayama et al. (2015) conducted a large-scale validation study of comprehensive health literacy in Japan using an adapted version of the HLS-EU instrument, and found that health literacy levels in Japan were substantially lower than those reported in comparable European populations, with a considerable proportion of respondents scoring in the problematic or inadequate range across the healthcare navigation, disease prevention, and health promotion domains. These findings suggest that challenges in interpreting and applying health information are widespread rather than confined to specific demographic subgroups. Ishikawa, Takeuchi and Yano (2008), in an earlier study adapting Nutbeam's functional, communicative, and critical health literacy framework for use with Japanese patients with diabetes, found that communicative and critical literacy — the dimensions most directly implicated in active participation in clinical dialogue — were substantially lower than functional literacy, even among patients with established experience of chronic disease management. These findings are consonant with the present study's observation that patients in Japan frequently report incomplete understanding of medication instructions while simultaneously rating their overall adherence as high: a pattern consistent with adequate functional comprehension alongside

limited communicative and critical capacity to interrogate, clarify, or negotiate that understanding within the consultation.

The relationship between health literacy and Shared Decision Making is not merely correlational but structurally interdependent and requires more explicit theoretical attention than is often afforded in clinical communication research. Paasche-Orlow and Wolf (2007) established that health literacy operates as a prerequisite condition for effective SDM: patients must be able to understand the treatment options presented to them, articulate their own values and preferences, and evaluate the implications of different clinical choices. Where health literacy is limited, patients may be unable to engage fully with the deliberative demands of SDM — particularly the Option Talk and Decision Talk stages described in Elwyn et al.'s (2012) Three-Talk Model — resulting in a form of apparent participation that conceals substantial gaps in understanding. Under these conditions, clinical interaction may produce the surface features of shared decision-making — patient agreement, absence of expressed concern — while leaving the relational and cognitive foundations of genuine collaboration unestablished. Frosch and Kaplan (1999) documented that SDM tends to be more readily adopted among younger and more highly educated patients, highlighting persistent structural inequalities in participatory capacity that map closely onto differential patterns of health literacy across patient populations. Within this context, limited health literacy can shift decisional responsibility away from transparent dialogue and toward private interpretation, creating conditions under which medication adherence decisions are made independently of physician guidance, outside the clinical encounter, and invisible to ongoing care

management. The implication for practice is that efforts to implement SDM without concurrently supporting health literacy will be systematically skewed toward patients who are already most engaged, leaving those most in need of communicative support without the interactional resources to benefit from participatory models of care.

Importantly, health literacy does not operate in isolation from the clinical interaction context. Studies indicate that patients often understand medical information more effectively when physicians adapt their communication styles, use plain language, and limit information overload (Graham and Brookey, 2008). However, power dynamics within the consultation can constrain patients' willingness to signal misunderstanding or ask clarifying questions, even when comprehension is incomplete. In such cases, patients may appear compliant while internally relying on personal judgement, symptom monitoring, or external information sources to guide medication use. This dynamic is particularly salient in the Japanese healthcare context, where cultural norms of deference to authority and emphasis on relational harmony discourage patients from expressing uncertainty or seeking clarification within consultations. In this environment, health literacy limitations are not merely a private cognitive challenge but become a systemic communication barrier: patients who lack communicative or critical literacy are simultaneously least equipped to navigate the interactional demands of clinical consultation and least likely, in a culturally high power-distance context, to actively seek the clarification or support that would address their gaps.

Thus, patient health literacy should be understood not merely as an individual attribute, but as a relational construct shaped by communication practices, power

dynamics, and clinical structure (Nutbeam and Lloyd, 2021). The expanded frameworks proposed by Sørensen et al. (2012) — extending health literacy to include appraisal across multiple life domains — and the construct of eHealth literacy (Norman and Skinner, 2006) further situate health literacy within the broader informational and technological environment in which patients now make health decisions. Japan-specific evidence confirms that health literacy challenges, and particularly limitations in communicative and critical literacy, are substantive and widespread, with direct implications for the quality of patient–physician dialogue around medication use (Nakayama et al., 2015; Ishikawa, Takeuchi, and Yano, 2008). Addressing adherence-related communication gaps therefore requires attention not only to information clarity and accessibility, but also to the interactional conditions — structured, culturally congruent, and relationally safe — that enable patients to express uncertainty, critically evaluate the information they receive, and engage meaningfully in shared decision-making with their healthcare providers.

2.6 Patients dissatisfaction with Physicians Communication

Patient satisfaction with physician communication has long been recognized as a critical indicator of healthcare quality and a key determinant of treatment adherence. Early empirical work demonstrated that deficiencies in physician–patient communication contribute significantly to patient dissatisfaction, independent of clinical outcomes (Korsch et al., 1968). Specific communication failures identified in this literature include

lack of warmth or empathy, insufficient consideration of patient concerns, and inadequate explanations of diagnosis and treatment rationale. These interactional shortcomings can undermine trust, reduce patient engagement, and weaken adherence to prescribed therapies — a relationship that subsequent meta-analytic evidence has confirmed to be both substantial and modifiable (Zolnieriek and DiMatteo, 2009).

Understanding how communication influences adherence requires a conceptual framework that specifies the pathways through which interaction shapes health behavior. Street et al. (2009) proposed an influential model identifying seven distinct pathways linking clinician–patient communication to health outcomes. These pathways operate through a set of proximal outcomes — including increased patient understanding, enhanced therapeutic alliance, improved self-efficacy, reduced emotional distress, and greater feelings of social support — which in turn produce distal health outcomes such as improved adherence, more effective self-care, and better health status. The central insight of this model is that communication does not directly determine health behavior; rather, it works through intermediate psychological and relational mechanisms that can be disrupted or reinforced by the structural and cultural conditions of clinical encounters. For the present study, this framework is particularly significant because it positions adherence not as a direct product of information delivery, but as the downstream outcome of whether a consultation successfully generated understanding, trust, and the patient’s sense of agency. Where these intermediate outcomes are absent — as this study argues is systematically the case in the Japanese healthcare context due to time constraints, power

dynamics, and cultural communication norms — adherence is likely to be compromised even when technically accurate information is conveyed.

Empirical support for the centrality of communication quality to adherence outcomes is provided by one of the most methodologically rigorous studies in this field. Zolnierak and DiMatteo (2009) conducted a meta-analysis encompassing 106 correlational studies and 21 experimental studies examining the relationship between physician communication and patient adherence to treatment across a range of chronic disease contexts. Their analysis found that patients of physicians with strong communication skills had 19% higher odds of adherence compared with patients of physicians assessed as less communicatively effective. Critically, experimental studies incorporating structured physician communication training produced a corresponding 19% increase in adherence rates, providing causal evidence that communication quality — not merely patient motivation or clinical severity — is a modifiable determinant of adherence behavior. Kaplan, Greenfield, and Ware (1989) similarly demonstrated that structured communication interventions designed to increase patient participation in clinical encounters were associated with significant improvements in chronic disease outcomes. Together, these findings carry a direct practical implication: improving medication adherence is achievable through investment in communication processes and represents a more tractable target for intervention than attempting to alter deeply embedded patient attitudes or cultural norms. This conclusion is directly aligned with the present study's reframing of adherence as a communication and interaction design challenge rather than a problem of individual patient compliance.

The Roter Interaction Analysis System (RIAS), developed by Roter and Larson (2002), provides a validated and widely applied observational methodology for analyzing the communicative content of clinical encounters at a fine-grained level. The RIAS codes both physician and patient speech acts into functional categories — including information-giving, information-seeking, partnership-building statements, emotional responsiveness, and socio-emotional exchanges — producing detailed profiles of consultation communication style that can be compared systematically across clinical contexts, patient populations, and cultural settings. Research employing the RIAS across international settings has demonstrated that consultation profiles vary significantly by cultural context. Japanese clinical encounters have been found to exhibit higher proportions of task-focused and information-giving exchanges and lower proportions of patient-initiated questioning, expressed concern, and socio-emotional engagement than comparable consultations in Western healthcare systems (Ohtaki, Ohtaki, and Feters, 2003). These structural differences in communication style — measurable at the level of individual speech acts — illustrate how culturally embedded norms translate into tangible interactional patterns that constrain the quality of information exchange and the conditions for meaningful patient participation. Evaluated against the proximal outcome pathways identified by Street et al. (2009), Japanese consultation profiles characterized by low patient-initiated questioning and limited socio-emotional exchange may be structurally less likely to generate the intermediate outcomes of understanding, self-efficacy, and emotional support upon which effective adherence depends.

One evidence-based communication strategy with direct relevance to addressing these gaps is the teach-back method, in which physicians invite patients to restate or demonstrate, in their own words, the key information conveyed during a consultation regarding their diagnosis, medication purpose, dosage, and adherence expectations. Schillinger et al. (2003), in a study of physician communication with patients with diabetes who had low health literacy, found that physicians who routinely employed teach-back — asking patients to recall or demonstrate their understanding of instructions just provided — were significantly more likely to achieve adequate glycemic control in their patients compared with physicians who relied on conventional explanatory monologue. The mechanism is consistent with the proximal pathway framework proposed by Street et al. (2009): teach-back operationalizes the comprehension-verification pathway by making patient understanding visible within the consultation itself, enabling the physician to identify and correct misunderstandings before they translate into adherence failures. Despite this evidence base, teaching remains inconsistently implemented in routine clinical practice, particularly in time-constrained environments. In Japan, where consultation times for new prescriptions frequently fall below five minutes, the systematic adoption of structured verification practices is further limited by operational pressures — suggesting that structural reforms enabling adequate consultation time are a prerequisite for meaningful improvements in communication quality and downstream adherence outcomes.

Cultural norms further shape how communication quality is experienced and how dissatisfaction is expressed or concealed within clinical encounters. Cross-cultural

research comparing physician–patient interactions in the United States and Japan, including studies drawing on RIAS-based coding frameworks, reveals notable and systematic differences in consultation structure and conversational patterns (Ohtaki, Ohtaki, and Feters, 2003). Japanese consultations tend to be shorter and include fewer follow-up questions or socio-emotional exchanges, while allowing longer periods of silence and placing greater emphasis on physical examination and diagnosis. These patterns reflect culturally embedded expectations around authority, communication, and relational harmony, and produce consultation profiles that when evaluated against the pathways specified by Street et al. (2009) are less structurally positioned to generate the intermediate outcomes of patient understanding, self-efficacy, and emotional support that medication adherence requires. The clinical consequences of these patterns are not immediately visible: patients may leave consultations with formal agreement but partial understanding, and physicians may proceed under the assumption of comprehension that the consultation structure itself has made it impossible to verify.

Importantly, lower levels of overt dissatisfaction do not necessarily indicate effective communication. In contexts such as Japan, patients may be reluctant to express dissatisfaction or confusion directly, particularly when doing so could be perceived as questioning medical authority or disrupting the relational harmony of the encounter. As a result, satisfaction measures alone may mask underlying communication gaps, especially in areas such as medication adherence where misunderstandings are not immediately visible in clinical outcomes. The RIAS-based observation that Japanese patients engage in fewer information-seeking exchanges and less emotional expression than their Western

counterparts does not indicate that they are less engaged or less in need of information; rather, it reflects the operation of culturally embedded communication norms that reduce the visibility of misunderstanding within the consultation. Understanding dissatisfaction therefore requires attention not only to expressed patient attitudes, but also to the relational and cultural conditions that shape disclosure, silence, and implicit agreement within clinical encounters — conditions that the present study argues are central to the persistence of adherence-related communication failures in Japan, and that must be addressed through interventions sensitive to both structural constraints and cultural context.

2.7 Digital Tools to support Medication Adherence

Digital health technologies have been widely promoted as promising solutions for improving medication adherence and supporting patient–physician communication. The landscape of digital adherence support tools is, however, heterogeneous, and a working taxonomy of principal intervention types is necessary before their evidence profiles and communicative potential can be assessed. The broadest category comprises reminder and alert systems — including text message notifications, automated voice calls, and application-based alarms — which prompt medication-taking at scheduled times through externally generated cues. A second category encompasses self-monitoring and tracking tools — including pill diaries, mobile applications, and electronic pill dispensers — through which patients record their own medication behavior, enabling personal

reflection but not necessarily shared clinical visibility. Third, patient portals and bidirectional digital platforms enable asynchronous communication between patients and healthcare providers, supporting information exchange, question submission, and clinical follow-up between scheduled consultations. Fourth, telemonitoring systems facilitate the remote collection of physiological or behavioral data by healthcare providers, enabling clinical oversight outside the consultation setting. Finally, an emerging category of artificial intelligence-assisted adherence tools applies predictive algorithms and conversational interfaces to personalize reminder schedules, identify non-adherence risk, or support patient self-management through interactive exchanges. Each of these categories carries a distinct evidence profile and different implications for patient–physician communication — a distinction that is critical to evaluating which digital tools can address the relational and interactional dimensions of medication adherence, rather than simply providing a technical adjunct to individual behavior change.

The importance of adherence-support interventions was underscored in the World Health Organization’s report *Adherence to Long-Term Therapies: Evidence for Action* (WHO, 2003), which highlighted the substantial clinical and economic burden associated with non-adherence globally. The report emphasized that interventions focused solely on pharmacological optimization are insufficient, and that adherence outcomes depend heavily on behavioral, relational, and system-level factors, including the quality of communication between patients and healthcare providers. Subsequent scholarship has echoed this view, positioning digital tools as potential enablers of ongoing patient engagement rather than standalone compliance mechanisms (van Boven and Fonseca,

2021). This framing is consistent with the present study's emphasis on communication design and interaction conditions as primary levers for improving adherence and highlights the need to evaluate digital tools not solely on their technical capabilities but on their capacity to support the communicative processes through which adherence is negotiated.

The evidence base for digital adherence interventions varies substantially by tool type and clinical context, and several systematic reviews have sought to characterize these differences. Thakkar et al. (2016), in a meta-analysis of randomized controlled trials examining mobile telephone text messaging for medication adherence across chronic disease conditions, found that text message reminders were associated with a statistically significant improvement in adherence, with moderate-quality evidence supporting their effectiveness in multiple therapeutic areas. Free et al. (2013) conducted a broader systematic review of mobile health technology-based interventions for health behavior change and disease management, concluding that while mobile technologies showed overall promise in improving health behaviors, effect sizes were generally modest, evidence quality variable, and the sustainability of improvements over longer time horizons remained a critical unresolved concern. Anglada-Martínez et al. (2015) reviewed the evidence specifically for smartphone applications and similarly found that while app-based tools demonstrate initial patient engagement, adherence to the tools themselves — rather than adherence to medication — frequently declined over time, raising questions about the durability of their clinical impact. Across these reviews, a consistent pattern emerges: digital tools focused on

reminders and individual monitoring can produce measurable short-term improvements, but their long-term effectiveness is contingent on sustained patient engagement, integration into clinical workflows, and alignment with patients' own communication preferences and relational contexts — factors that are not systematically addressed by tools designed primarily as patient-side self-management aids.

Empirical evidence regarding the adoption and effectiveness of digital adherence tools further suggests that uptake is strongly context dependent. While usage remained relatively limited in routine clinical practice prior to 2020, the COVID-19 pandemic accelerated the uptake of digital health solutions across many healthcare systems. Studies reported temporary improvements in adherence in conditions such as asthma and chronic obstructive pulmonary disease during this period, attributed in part to heightened disease salience and the expanded use of digital monitoring tools in the absence of routine in-person consultations (Kaye et al., 2020; van de Hei et al., 2021). However, these gains were not uniformly sustained following the acute phase of the pandemic, reinforcing concerns raised by systematic reviews regarding long-term engagement. These dynamics suggest that adoption increases driven by external circumstances do not address the underlying barriers to sustained digital tool use — including perceived relevance, ease of integration into daily routines, and the degree to which tools function as part of an ongoing patient–physician communication process rather than as isolated behavioral prompts.

The Technology Acceptance Model provides a useful theoretical framework for understanding these patterns. Adoption of digital tools depends not only on technical

availability, but also on users' perceptions of usefulness, ease of use, and relevance to existing clinical and personal practices (Davis, 1989). In the context of medication adherence, tools perceived as burdensome, intrusive, or functionally disconnected from the physician–patient relationship may be underutilized or abandoned despite clinical potential (Venkatesh et al., 2003). Moreover, tools positioned primarily as patient-side self-management aids risk reinforcing existing communication gaps if adherence behavior remains invisible to physicians — a structural failure of design rather than technology. From a TAM perspective, the perceived usefulness of a digital tool from the physician's standpoint is a critical but frequently neglected dimension of adoption: unless clinicians can integrate tool outputs into their consultation practice, patient-generated adherence data adds individual burden without generating shared clinical value.

Japan's digital health landscape presents a distinctive set of contextual characteristics that directly shape both the adoption and communicative potential of digital adherence tools. Despite Japan's high general technological adoption and smartphone penetration, the uptake of dedicated health management applications has remained comparatively limited relative to other digital services. The messaging platform LINE — rather than purpose-built health applications — represents the predominant channel through which Japanese consumers engage with digital services on mobile devices. This platform preference suggests that adherence tool deployment strategies designed around standalone application download and registration may face structural adoption barriers in Japan, whereas interventions embedded within familiar

conversational interfaces may achieve greater uptake and sustained engagement. At the government level, the Ministry of Health, Labour and Welfare (MHLW) has developed initiatives to expand Japan's national Personal Health Record (PHR) infrastructure, enabling citizens to consolidate medical records, prescription histories, and health examination data in a unified, patient-accessible digital format (Ministry of Health, Labour and Welfare, Japan, 2022). The Pharmaceuticals and Medical Devices Agency (PMDA) have similarly developed regulatory guidance for Software as a Medical Device (SaMD), establishing a formal framework for the clinical evaluation and approval of digital health tools intended for diagnostic or therapeutic purposes. However, regulatory pathways remain nascent, and the integration of digital adherence tools into the clinical consultation — as shared communication artefacts visible to both patients and physicians — has not yet been systematically achieved within the Japanese healthcare system, representing both a gap in current practice and a significant opportunity for intervention design.

A critical but underdeveloped function of digital tools in adherence support is their potential to bridge the patient–physician communication gap between scheduled consultations. Irizarry, DeVito Dabbs and Curran (2015), in a state-of-the-science review of patient portal adoption and engagement, identified bidirectional digital platforms as particularly promising in terms of their capacity to extend patient–physician communication beyond the temporal constraints of clinical visits. Features enabling patients to submit questions, report medication concerns, or receive clarification on instructions between appointments address a structural gap in current adherence support:

the interval between consultations during which patients must independently interpret medication guidance without recourse to professional input. This between-consultation function is especially relevant in the Japanese context, where the brevity of routine consultations limits the depth of adherence dialogue that can occur within scheduled encounters. Tools that support asynchronous communication — including secure messaging, shared adherence summaries, or structured digital check-in interfaces — can in principle function as continuous communication mediators, creating iterative opportunities for the patient–physician dialogue that short consultations structurally preclude. However, as van Boven and Fonseca (2021) noted, the effectiveness of such tools is contingent on physician adoption and on whether they are perceived as adding communicative value to clinical practice rather than administrative burden. In Japan, where consultation volumes are high and physician workload is significant, integrating between-consultation digital communication channels into routine care would require organizational endorsement, workflow redesign, and reimbursement models that make physician engagement practicable rather than aspirational.

This literature suggests that digital tools are not inherently transformative but function as mediators whose impact depends critically on how they are designed, categorized, and embedded within patient–physician communication processes. The taxonomy of intervention types introduced in this section clarifies that tools designed for shared visibility, bidirectional communication, and ongoing dialogue operate through fundamentally different mechanisms from those focused on individual reminders or patient-side monitoring — and their clinical potential for addressing the relational roots

of adherence failure must be assessed accordingly. Systematic review evidence confirms that reminder-based tools can produce short-term adherence improvements, but that sustainability requires integration into communicative clinical workflows that remain underdeveloped in current practice. Japan's specific digital health context — shaped by dominant platform preferences, nascent regulatory frameworks, and constrained consultation structures — introduces additional conditions that must be accounted for in any viable deployment strategy. Understanding the communicative role of digital tools within this context is therefore essential to assessing their potential contribution to improving medication adherence, and to ensuring that digital interventions are designed to complement, rather than replicate or reinforce, the structural and relational barriers that sustain the adherence communication gap.

2.8 Conclusion

This chapter has reviewed the literature relevant to patient–physician communication and medication adherence, drawing on theoretical, empirical, and contextual perspectives to clarify the nature of the communication gap this study seeks to address. Across the reviewed literature, medication adherence emerges not as a matter of patient motivation alone, but as a complex outcome shaped by relational dynamics, communicative practices, patient capacity, and system-level constraints. While physicians and patients generally share an understanding of the importance of adherence,

the ways in which adherence-related information is conveyed, interpreted, and acted upon frequently diverge.

The literature on patient–physician power dynamics highlights that authority in clinical encounters is often exercised implicitly rather than overtly. Time constraints, professional norms, and culturally embedded expectations contribute to interactional patterns in which patient silence is interpreted as understanding and agreement. Although models such as Shared Decision Making seek to rebalance authority and promote collaboration, their implementation remains uneven and contingent on patients’ ability to engage meaningfully in dialogue. In parallel, health literacy research demonstrates that patients’ capacity to understand and act on medical information extends beyond functional knowledge to include communicative and relational competence. When patients lack confidence or opportunity to clarify uncertainty, adherence decisions may shift from shared clinical reasoning to private interpretation.

The reviewed literature further suggests that dissatisfaction with physician communication is often under-reported, particularly in cultural contexts where maintaining relational harmony is prioritized. In Japan, shorter consultations, fewer follow-up questions, and greater tolerance of silence may mask communication gaps rather than resolve them. As a result, misunderstandings related to medication use can persist without overt conflict, becoming visible only when adherence problems lead to adverse clinical outcomes.

Digital tools offer potential mechanisms for supporting medication adherence, yet existing evidence indicates that their effectiveness depends critically on how they are

embedded within communication practices. Tools positioned primarily as self-management or monitoring solutions risk reinforcing existing power and literacy asymmetries if adherence behavior remains invisible to physicians. Conversely, technologies designed to support shared visibility, reflection, and dialogue may function as communicative mediators rather than compliance mechanisms. The Technology Acceptance Model underscores that adoption of such tools depends not only on technical capability, but also on perceived relevance, usability, and integration into existing clinical workflows.

Collectively, the literature reveals a gap in integrative research examining how power dynamics, patient health literacy, and digital mediation interact to shape patient–physician communication around medication adherence—particularly within the Japanese healthcare context. While each domain has been studied independently, fewer studies have examined their combined influence or considered how cultural and structural factors condition communication behaviors and disclosure practices.

In response to this gap, the next chapter outlines the methodological approach used to empirically investigate these interrelated constructs. Chapter III presents the conceptual operationalization of the key theoretical frameworks reviewed in this chapter, translating abstract concepts into measurable dimensions and indicators. It then details the research design, sampling strategy, instrumentation, data collection procedures, and analytical approach employed to examine communication gaps between patients and physicians in Japan. By grounding the empirical investigation in the theoretical foundations established in this literature review, the methodology is designed to generate

systematic, context-sensitive insights and to support the development of practical, evidence-based solutions for improving patient–physician communication on medication adherence.

CHAPTER III: METHODOLOGY

3.1 Overview of the Research Problem

The patient–physician relationship has historically been characterized by information asymmetry and professional authority, with physicians acting as the primary decision-makers in clinical care. Classical models of medical paternalism position physicians as the holders of expert knowledge and patients as largely passive recipients of treatment decisions. Although patients’ access to health information has expanded — mostly through the internet — this imbalance in who decides has not shifted. Physicians still hold final responsibility for treatment choices.

From the perspective of information asymmetry theory, the proliferation of publicly accessible medical information has altered the informational environment of healthcare encounters without fully redefining the relational structure. Patients increasingly engage in independent information-seeking behaviors, especially when they perceive gaps in understanding following clinical consultations. Research suggests that this change can generate tension during clinical interactions, as physicians may perceive externally sourced information as a challenge to professional authority rather than as a basis for collaborative dialogue (Helft, 2003). These dynamics highlight an unresolved tension between greater patient knowledge and traditional role expectations within clinical encounters.

The growing emphasis on Shared Decision Making (SDM) represents a theoretical and normative shift away from paternalistic models toward partnership-based care. SDM conceptualizes clinical decision-making as a collaborative process in which medical evidence and patient values are jointly considered, requiring bidirectional communication, trust, and mutual understanding. Within this framework, effective communication is not merely informational, but relational, emphasizing shared responsibility and patient engagement. However, the practical implementation of SDM remains uneven, particularly in domains such as medication adherence, where sustained patient behavior extends beyond the clinical encounter.

Medication adherence itself is a multidimensional construct influenced by interacting patient, provider, therapy, health system, and societal factors, as described in established adherence frameworks. Communication quality between patients and physicians is a central mediating factor: inadequate understanding, misaligned expectations, or insufficient patient engagement can undermine adherence even when effective treatments are prescribed. From a health literacy perspective, patients' ability to obtain, interpret, and apply medication-related information is critical. Models of health literacy distinguish between functional understanding and higher-order competencies such as critical appraisal and decision-making, suggesting that increased access to information alone does not guarantee meaningful comprehension or appropriate action.

The integration of digital tools into healthcare delivery introduces additional theoretical considerations. Digital health technologies may act as communication mediators, potentially reducing information gaps, reinforcing adherence behaviors, and

supporting SDM across time and settings. At the same time, the effectiveness of such tools depends on alignment with patient literacy levels, physician acceptance, and existing relational norms. Without a clear theoretical understanding of how digital tools intersect with power dynamics, literacy, and communication practices, their impact on medication adherence remains uncertain.

While prior studies have examined patient–physician relationships, health literacy, SDM, and digital health interventions independently, there is a lack of integrative research examining how these constructs interact to shape medication adherence—particularly in the Japanese context. Cultural expectations regarding authority, communication style, and patient roles may influence how SDM, literacy, and digital tools are interpreted and enacted in clinical practice. This gap indicates a need for theoretically grounded, context-specific research that moves beyond descriptive analysis toward practical, application-oriented insights.

Accordingly, this research aims to develop a theoretically informed understanding of how patient–physician communication related to medication adherence can be improved in Japan. By integrating perspectives from SDM theory, health literacy models, and adherence frameworks, the study seeks to generate actionable insights and practical solutions. The research is guided by the following questions:

1. To identify the root causes of the patient-physician gap that exists on medication adherence in Japan.
2. To examine three key themes: power dynamics of patient-physician relationship, role of patient literacy and role of digital in addressing the communication gap

3. To assess the impact on how much of the Japanese culture and its heritage is the root cause of the patient-physician power dynamics.
4. To assess the importance of patient literacy
5. To share learning and insights on how best to address the communication gap
6. To provide practical solutions to help facilitate the patient-physician communication on medication adherence.

3.2 Operationalization of Theoretical Constructs

This section follows the structure of first starting with a) the definition of the conceptual framework then b) the key dimensions followed by c) what are the key observable and measurable indicators and finishing off with d) what are some examples of data sources that can be used.

Shared Decision Making (SDM)

Conceptual Definition

Shared Decision Making is defined as a collaborative communication process in which physicians and patients jointly exchange information, deliberate on treatment options, and reach decisions that integrate clinical evidence with patient values and preferences (Charles et al., 1997; Elwyn et al., 2012).

Key Dimensions

Based on SDM theory and the Three-Talk Model, SDM can be operationalized through the following dimensions:

- Information exchange
- Deliberation of options,
- Elicitation of patient preferences
- Joint decision responsibility

Operational Indicators

SDM can be measured using patient- or physician-reported indicators such as:

- Extent to which patients feel informed about treatment options.
- Degree to which patients feel their values and preferences were considered
- Perceived involvement in decision-making
- Clarity of discussion regarding benefits, risks, and alternatives

These indicators can be captured using Likert-scale survey items (e.g., “I felt involved in decisions about my medication”) or structured interviews assessing consultation experiences.

Example Measurement Tools and Data Sources

- SDM-Q-9 / SDM-Q-Doc questionnaires
- Patient experience surveys post-consultation
- Semi-structured interviews with patients and physicians

- Observation or coding of consultation transcripts (if qualitative)

Health Literacy

Conceptual Definition

Health literacy refers to an individual's ability to access, understand, appraise, and apply health information to make appropriate health decisions (Nutbeam, 2000). It is conceptualized as a multidimensional construct encompassing functional, interactive, and critical competencies rather than as a simple literacy skill.

Key Dimensions

Based on Nutbeam's framework, health literacy is operationalized across three levels:

- Functional health literacy: basic understanding of written and verbal health information
- Interactive health literacy: ability to communicate, ask questions, and apply information
- Critical health literacy: capacity to critically evaluate information and make informed judgments

Operational Indicators

Health literacy can be measured using indicators such as:

- Patient understanding of medication purpose, dosage, and adherence importance
- Ability to ask clarifying questions during consultations
- Confidence in evaluating health information from the internet
- Self-reported difficulty understanding physician communication

Example Measurement Tools and Data Sources

- Functional, Communicative and Critical Health Literacy Scale (FCCHL)
- Health Literacy Questionnaire (HLQ)
- Patient comprehension assessments and qualitative interviews

WHO Multidimensional Adherence Model

Conceptual Definition

The WHO Multidimensional Adherence Model conceptualizes medication adherence as a complex outcome influenced by interacting patient-related, therapy-related, condition-related, health system/provider, and socio-economic factors (World Health Organization, 2003). The model explicitly rejects individual blame and emphasizes systemic determinants of adherence.

Key Dimensions

- For this dissertation, adherence is operationalized focusing on:

- Patient-related factors (knowledge, beliefs, motivation)
- Health system and provider factors (quality of communication)
- Therapy-related factors (complexity of medication regimen)

Operational Indicators

Medication adherence is operationalized using:

- Self-reported adherence behavior (e.g. missed doses)
- Understanding of medication instructions
- Perceived adequacy of physician communication
- Reported barriers to adherence (forgetfulness, confusion, side effects)

Example Measurement Tools and Data Sources

- Morisky Medication Adherence Scale (MMAS-8)
- Patient self-report questionnaires
- Qualitative interviews exploring adherence challenges

Technology Acceptance Model (TAM)

Conceptual Definition

The Technology Acceptance Model (TAM) explains technology adoption based on users' perceptions of usefulness and ease of use, which shape behavioral intention and actual

usage (Davis, 1989). TAM is grounded in the Theory of Reasoned Action and is widely used to predict acceptance of information systems.

Key Dimensions

Core TAM constructs used in this study are:

- Perceived usefulness: belief that technology enhances performance or outcomes
- Perceived ease of use: belief that technology requires minimal effort
- Behavioral intention to use
- Actual use behavior

Operational Indicators

In the context of digital tools for patient–physician communication and medication adherence, TAM can be operationalized through:

- Belief that the tool improves understanding of medication adherence
- Perceived simplicity and usability of the technology
- Willingness to use or recommend the tool
- Frequency of actual usage

Example Measurement Tools and Data Sources

- TAM-based survey instruments adapted for healthcare settings
- Usage data or system logs (where available)

- User interviews focusing on adoption barriers and facilitators

3.3 Research Purpose and Questions

This research aims to examine the underlying factors contributing to gaps in patient–physician communication related to medication adherence, with a particular focus on the Japanese healthcare context. The study explores this issue through three interrelated themes. First, it investigates the power dynamics inherent in the patient–physician relationship and how these dynamics shape communication around medication adherence. Second, it examines the role of patient health literacy in interpreting and acting upon physicians’ explanations and recommendations regarding medication use. Third, the research considers the potential role of digital solutions and practical tools in facilitating more effective communication between patients and physicians to support adherence.

By systematically analyzing these three themes, the research seeks to achieve several key objectives. These include identifying the root causes of communication gaps between patients and physicians in relation to medication adherence in Japan; examining how power dynamics, patient literacy, and digital tools individually and collectively influence these gaps; and assessing the extent to which Japanese culture and societal norms contribute to physician-led decision-making structures. In addition, the study evaluates the importance of patient literacy in promoting understanding and adherence, synthesizes key insights on effective communication strategies, and proposes practical,

actionable solutions to improve patient–physician communication and support medication adherence.

Research Questions

1. To identify the root causes of the patient-physician gap that exists oin medication adherence in Japan.
2. To examine three key themes: power dynamics of the patient-physician relationship, role of patient literacy and role of digital tools in addressing the communication gap
3. To assess the extent to which Japanese culture and its heritage is the root cause of the patient-physician power dynamics
4. To assess the importance of patient literacy
5. To share learning and insights on how best to address the communication gap
6. To provide practical solutions to help facilitate the patient-physician communication on medication adherence

Hypothesis

Gaps in patient–physician communication regarding medication adherence in Japan are shaped by physician-dominant power dynamics, varying levels of patient health

literacy, and insufficient use of digital or practical communication tools, leading to reduced patient understanding and engagement in adherence behaviors.

3.4 Research Design

This study adopts a cross-sectional, quantitative research design supported by a structured integration of relevant secondary literature. Philosophically, the research is grounded in a pragmatist epistemological orientation, which prioritizes practical, applicable knowledge and selects research methods based on their fitness for purpose in addressing specific research questions, rather than adherence to a single methodological tradition (Creswell, 2014). Pragmatism is particularly appropriate for applied, practice-oriented research of the kind conducted within a Doctor of Business Administration Program, where the primary objective is to generate actionable insights for real-world decision-making rather than to contribute to abstract theoretical debate. Within this orientation, quantitative and secondary methods are adopted not on grounds of philosophical commitment, but because they are best suited to the analytical objectives of this study.

The study employs a cross-sectional survey design, in which structured data from patient and physician respondents are collected at a single point in time through internet-administered questionnaires. This design is well-suited to the study's descriptive and explanatory objectives: to describe the nature and extent of the patient–physician communication gap in relation to medication adherence, and to examine the relational,

cognitive, and structural factors associated with that gap across a defined population in Japan. The quantitative approach enables the systematic identification of patterns, perceptual differences, and comparative trends across respondent groups and disease contexts at a scale and level of analytical consistency that would be difficult to achieve through qualitative means alone (Fowler, 2014). A qualitative component — such as semi-structured interviews or consultation observation — was considered during the design phase and would have provided valuable contextual depth; however, it was assessed as less suitable for the primary objective of identifying systematic cross-group patterns at scale and has been identified as a direction for future research in Chapter VI.

The analytical approach of this study is structured around two complementary inputs. The first is the primary quantitative data generated through the internet-based surveys, which provides the empirical foundation for examining communication patterns, perceptual gaps, and adherence behaviors. The second is a structured review of secondary literature and previously published empirical research, including the author's prior work on patient–physician adherence gaps in Japan (Liguori, 2016). The integration of these secondary sources fulfils three analytical purposes: it provides a theoretical and empirical reference framework against which primary survey findings are interpreted; it enables triangulation of insights across methodologically distinct sources; and it facilitates the contextualization of findings within the broader academic literature. In this sense, the study's overall research approach is integrative rather than purely deductive, combining systematic quantitative inquiry with theoretically grounded interpretation.

One point about scope requires clarification. The term “mixed research approach” used in earlier sections of this chapter refers to the combination of primary quantitative survey data and secondary literature review — not to a mixed-methods design incorporating both quantitative and qualitative primary data collection. The study is exclusively quantitative in its primary data collection methodology. The interpretive layer — provided by the researcher’s engagement with theoretical frameworks and secondary literature — is an inherent feature of all explanatory research and does not constitute a qualitative research component in the methodological sense.

3.5 Population and Sample

The target population for this study comprises practicing physicians and adult patients currently receiving medical treatment in Japan. Eligibility criteria were applied to both respondent groups to ensure the relevance and quality of the data. Physician respondents were required to be actively practicing in Japan at the time of data collection, and to be directly involved in outpatient consultations in which medication is prescribed and reviewed. Patient respondents were eligible if they were adults currently receiving treatment for either an oncology-related condition or a lifestyle-related chronic condition — specifically conditions such as hypertension or metabolic disease — and had at least one ongoing prescription medication at the time of survey participation. These eligibility criteria were operationalized and enforced by the third-party survey research vendor through validated screening questions administered at the outset of each survey

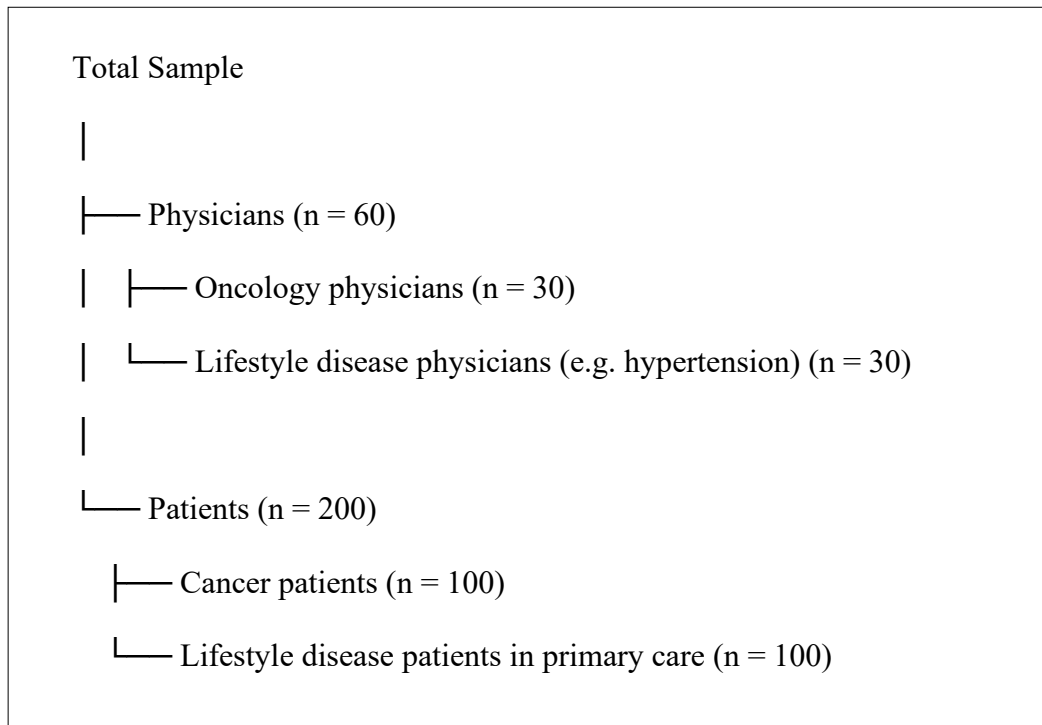
instrument (see Appendix A and Appendix B for full questionnaires and screening items). Respondents who did not meet the eligibility criteria were automatically excluded from the survey at the screening stage.

A stratified sampling approach was employed to ensure systematic representation across clinically distinct contexts. Physician participants were equally allocated between those primarily treating oncology patients ($n = 30$) and those managing lifestyle-related chronic conditions ($n = 30$). A corresponding stratification was applied to the patient sample, producing equal representation of cancer patients ($n = 100$) and lifestyle disease patients ($n = 100$). Equality allocation across disease groups was an intentional analytical design decision rather than a proportional representation of population prevalence. By ensuring equal case volumes within each subgroup, the design supports reliable within-group description and meaningful cross-group comparison across the two clinical contexts — which is the primary comparative objective of this study. Stratified sampling designs of this type are widely recommended in health and epidemiological research contexts where subgroup comparisons are the analytical priority, as they allow systematic examination of differences across disease severity and care settings while reducing the risk of confounding (Rothman, Huybrechts and Murray, 2024; Poorolajal, 2025).

The total sample sizes of 200 patients and 60 physicians were determined through a combination of practical feasibility considerations and alignment with established conventions for internet-based descriptive survey research. Formal power calculations are primarily appropriate for inferential hypothesis-testing studies with specified effect size parameters; in contrast, descriptive survey research is more conventionally assessed

through considerations of sample adequacy relative to the number of analytical subgroups and the precision required for pattern identification (Fowler, 2014). The study's stratified design involves four analytical subgroups — oncology physicians, lifestyle disease physicians, cancer patients, and lifestyle disease patients — with minimum subgroup sizes of $n = 30$ and $n = 100$ respectively, each providing sufficient case volumes for the percentage-based descriptive comparisons and cross-tabulation analysis conducted in this study. These sample sizes are consistent with the overall study's objectives of identifying directionally consistent patterns and perceptual gaps rather than generating population-representative statistical estimates. The unit of analysis throughout this study is the individual respondent — a single physician or patient — rather than the physician–patient dyad, reflecting the survey-based rather than dyadic-observational nature of the data collection.

Table 3.1 Sample Distribution Across Respondent Groups and Disease Categories



3.6 Panel Selection

Participants for this study were recruited through a third-party survey research vendor with a strong operational presence and established panels in Japan. The vendor was responsible for identifying and enrolling eligible patient and physician respondents in accordance with predefined inclusion criteria, ensuring appropriate representation across disease areas and care settings. Using an external research agency enabled efficient access to verified healthcare professionals and patients while maintaining

respondent anonymity, data quality, and compliance with ethical and survey research standards commonly applied in Japan.

3.7 Instrumentation

Data for this study were collected using structured, internet-based survey instruments administered to both patient and physician respondents. The questionnaires were designed to quantitatively assess perceptions and experiences related to patient–physician communication on medication adherence, with a particular focus on power dynamics, patient health literacy, and communication support tools. To enable direct comparison between perspectives, survey items were mirrored across patient and physician versions where appropriate, ensuring conceptual equivalence while maintaining role-specific wording. Closed-ended questions using standardized response scales were employed to facilitate consistency, comparability, and statistical analysis of patterns and trends across respondent groups and disease contexts.

The survey instruments were distributed via a third-party survey research platform, allowing secure, anonymous participation and standardized data capture. Instrument design emphasized clarity, neutrality, and relevance to the Japanese healthcare context, minimizing response bias and ensuring respondent comprehension. The use of structured instrumentation enabled systematic aggregation of responses across large samples, supporting the identification of communication gaps, perceptual misalignments, and potential leverage points for intervention. This approach ensured methodological

rigor while maintaining practical relevance to the study's objective of generating actionable insights to improve patient–physician communication on medication adherence.

3.8 Data Collection Procedures

Data collection was conducted using an online, cross-sectional survey approach administered through a third-party survey research company with an established presence in Japan. The research vendor was responsible for recruiting eligible patient and physician participants from pre-existing, verified panels based on predefined inclusion criteria, including disease area and professional background. Potential respondents received survey invitations electronically and provided informed consent prior to participation. Data collection was carried out within a defined fieldwork period, during which responses were monitored to ensure target sample sizes and balanced representation across disease categories were achieved.

Survey responses were captured anonymously via a secure online platform to protect respondent confidentiality and reduce social desirability bias. Quality control measures were implemented by the research vendor, including screening questions, removal of incomplete or inconsistent responses, and validation of physician credentials. Completed surveys were compiled into a structured dataset for analysis, allowing systematic comparison between patient and physician perspectives as well as across disease contexts. This standardized data collection procedure ensured consistency,

reliability, and comparability of responses while enabling efficient identification of patterns related to patient–physician communication and medication adherence.

3.9 Data Analysis

The analytical process for this study was structured across two sequential and clearly differentiated stages, reflecting the respective responsibilities of the third-party research vendor and the researcher. This two-stage structure is documented transparently to ensure accountability for both the technical processing of data and the substantive interpretation of findings, in accordance with professional standards for survey research reporting (ICC/ESOMAR, 2025).

In the first stage, primary quantitative data were processed and analyzed by the third-party survey research vendor as part of their standard research delivery. The vendor cleaned and consolidated the raw survey responses, applied quality control protocols including validation of physician credentials and removal of incomplete or logically inconsistent submissions, and the production of analysis-ready deliverables. These deliverables comprised descriptive summary tables reporting response frequencies and percentages across all survey items for the total sample, and structured cross-tabulation outputs presenting subgroup breakdowns — specifically, oncology versus lifestyle disease respondents within each group, and physician versus patient responses on mirrored survey items. Cross-tabulation is a recognized and well-established analytical technique in survey-based research for comparing categorical response distributions

across defined subgroups and identifying relationships that are not visible in aggregate totals (Qualtrics, 2018). The vendor's outputs constitute the empirical data foundation of this study, and all relevant tabulations are reproduced in Appendices C, D, E, and F to ensure full transparency and reproducibility of the findings reported in Chapter IV.

In the second stage, the researcher took on the integration of vendor's outputs. This interpretive stage involved three interrelated analytical activities. First, a systematic comparative analysis of the descriptive tables and cross-tabulations was conducted, identifying patterns of alignment and divergence between patient and physician responses across all survey dimensions — including differences in perceived adherence importance, self-assessed understanding, actual adherence behavior, communication practices, and digital tool use — at both aggregate and subgroup levels. Second, the identified empirical patterns were interpreted through the study's four theoretical frameworks — Shared Decision Making, health literacy theory, the WHO Multidimensional Adherence Model, and the Technology Acceptance Model — providing a theoretically grounded explanatory account of the observed data rather than a purely descriptive frequency report. Third, primary survey findings were triangulated with insights from the secondary literature reviewed in Chapter II and with findings from the author's prior study on adherence communication in Japan (Liguori, 2016), to contextualize results within established knowledge and identify points of convergence and divergence. The researcher's interpretive outputs constitute the analytical substance of Chapters IV and V, and no modifications were made to the underlying vendor-produced data or tabulations.

The division of analytical responsibilities between the vendor and the researcher — vendor-conducted technical processing and researcher-conducted theoretically informed interpretation — represents an appropriate and transparent practice for studies utilizing professional survey research platforms (ESOMAR/GRBN, n.d.). This separation supports research integrity by ensuring that data collection and initial processing are conducted independently of the researcher's theoretical commitments. The key condition for this approach to be academically defensible is that the boundary between these roles is clearly documented and that the researcher's interpretive contribution is substantively grounded in theory and secondary evidence — both of which are demonstrated in this chapter and in Chapters IV and V respectively.

3.10 Ethical Considerations

The conduct of this study was guided by the ethical principles applicable to quantitative social and healthcare research, with specific regard to the rights and welfare of research participants, the protection of personal data, and the transparent management of potential conflicts of interest. The study was conducted in accordance with the institutional requirements of the Swiss School of Business and Management Geneva (SSBM) and with the professional standards articulated in the ICC/ESOMAR International Code on Market, Opinion and Social Research and Data Analytics (ICC/ESOMAR, 2025). As the primary data collection was conducted through a third-party survey research vendor operating in Japan, the study also benefited from the

vendor's established ethical compliance infrastructure, which includes internal respondent verification procedures, data security protocols, and adherence to applicable professional and legal standards for online research practice.

Informed consent was obtained from all survey participants prior to participation. Each respondent received a digital consent notice at the outset of the survey instrument, describing the purpose of the research, the nature and scope of the questions to be asked, the voluntary nature of participation, the right to withdraw at any point without consequence, and the procedures by which all responses would be handled anonymously. Respondents who did not provide active consent were excluded from the survey at the point of the consent screen and were not permitted to proceed. The anonymity of individual respondents was maintained throughout the data collection, analysis, and reporting process: no personal identifiable information was collected, transmitted to the researcher, or included in any analytical output. All results are presented in aggregated or tabulated forms that preclude the identification of individual respondents.

Data collection activities involving participants' healthcare experiences and perceptions are subject to Japan's Act on the Protection of Personal Information (APPI, amended 2022), which governs the collection, use, storage, and disposal of personal data by organizations operating in Japan. The third-party research vendor, operating within the Japanese market, held responsibility for ensuring that all aspects of respondent data management — including consent processes, data retention periods, and security protocols — complied with APPI requirements. The researcher received no raw individual-level response data, only aggregated

and anonymized analytical outputs, further reducing any residual data protection risk at the researcher's end.

A specific ethical consideration in this study concerns the inclusion of oncology patients as a respondent subgroup. Cancer patients may represent a psychological and physically vulnerable population in healthcare research, given the significant burden associated with diagnosis, treatment, and prognosis uncertainty. To minimize potential distress, the survey instrument was designed to focus on communication processes and adherence perceptions rather than clinical details, symptom experiences, or prognosis-related information. Participation was entirely voluntary, self-paced, and conducted through an online format that allowed respondents to withdraw at any time. The vendor's screening procedures confirmed eligibility based on general disease category without requiring disclosure of specific diagnosis, staging, or treatment information. The researcher acknowledges the heightened sensitivity of this subgroup and has ensured that findings from cancer patient respondents are interpreted and reported with appropriate contextual care.

Finally, the researcher acknowledges a potential source of positional bias arising from professional context. As Head of the Japan Oncology Business Unit for a pharmaceutical company, the researcher has a direct professional interest in the topic of medication adherence and the patient–physician communication dynamics examined in this study. This positionality was managed through several deliberate steps: the use of an independent third-party vendor for data collection and initial analysis ensured that the researcher had no involvement in or influence over the data collection process; the full

reproduction of all vendor-produced analytical outputs in the thesis appendices enables independent verification of the findings; and the explicit differentiation, documented in Section 3.9, between vendor-produced quantitative summaries and the researcher's interpretive analysis ensures transparency regarding the basis for all conclusions. The researcher affirms that findings are reported objectively and that all conclusions are grounded in the empirical outputs of the survey and the theoretical frameworks applied, rather than in professional assumptions or commercial interests.

3.11 Research Design Limitations

One key limitation of this research design is its reliance on self-reported data, particularly for sensitive and socially normative behaviors such as medication adherence. Self-reported survey responses are susceptible to recall bias and social desirability bias, which can lead respondents to overestimate their adherence or underreport intentional non-adherence, thereby inflating perceived compliance levels (Nguyen, La Caze and Cottrell, 2014; Dunbar-Jacob and Zhao, 2025). This limitation is well documented in adherence research, where self-report measures are widely used for their practicality but offer lower precision compared with objective measures such as pharmacy refill data or electronic monitoring devices. In the Japanese cultural context, social desirability bias may be particularly pronounced, given cultural norms that discourage the disclosure of non-compliant behavior to authority figures — the same dynamics that this study identifies as central to the adherence communication gap.

A second limitation concerns the use of an online survey and panel-based sampling approach. While online surveys enable efficient and scalable data collection, they may introduce selection bias, as participation requires digital access and a willingness to engage with online research panels. This may result in the underrepresentation of individuals with lower digital literacy, more severe health burdens, or less familiarity with internet-based survey platforms (Menon and Muraleedharan, 2020; Szałata et al., 2024). In addition, panel-based surveys are susceptible to self-selection bias, whereby individuals who choose to participate differ systematically from those who do not, limiting the generalizability of findings to the wider population of patients and physicians in Japan (Copas et al., 2020). These limitations are acknowledged alongside the recognition that the study's objective is to identify directional patterns rather than to generate population-representative statistical estimates.

Third, the cross-sectional nature of the survey design constrains the ability to infer causality between patient–physician communication practices, health literacy, digital tool use, and medication adherence outcomes. Cross-sectional surveys capture perceptions and self-reported behaviors at a single point in time and cannot establish temporal directionality, account for changes in communication dynamics across treatment stages, or distinguish between stable patterns and situational responses (Naumova, 2025). Findings should therefore be interpreted as indicative of consistent directional patterns and relational associations rather than definitive causal mechanisms,

and longitudinal research designs are identified in Chapter VI as a priority for future investigation.

A fourth limitation relates to the analytical role of the third-party research vendor as an intermediary between raw survey data and the researcher's interpretive analysis. As described in Section 3.9, the initial processing, cleaning, and tabulation of survey data were conducted by the vendor rather than directly by the researcher. While this arrangement supports methodological transparency and data integrity — and is consistent with professional survey research standards (ICC/ESOMAR, 2025) it introduces a degree of analytical intermediation in which the researcher's interpretive work is dependent on the completeness and accuracy of vendor-produced outputs rather than direct access to raw response-level data. This limitation has been mitigated by the full reproduction of all relevant vendor outputs in the thesis appendices, enabling independent verification of the numerical basis for findings reported in Chapter IV.

A fifth limitation concerns the cultural and geographical scope of the study's findings. The research is situated specifically within the Japanese healthcare context, and the cultural characteristics analyzed — including power distance, uncertainty avoidance, and high-context communication norms — are most precisely applicable to Japan. However, some of these characteristics are shared to varying degrees across other East Asian healthcare systems, including South Korea, China, and Taiwan. The study does not attempt to distinguish between cultural factors uniquely attributable to Japan and those reflecting broader East Asian patterns and does not include cross-national comparative data. As a result, the extent to which findings generalize to other national

contexts — whether within or beyond East Asia — remains an open question, and cross-national comparative research is identified as a further priority for future investigation.

3.12 Conclusion

This chapter has established a coherent theoretical and methodological foundation for examining patient–physician communication on medication adherence within the Japanese healthcare context. By situating the research problem within longstanding dynamics of information asymmetry and professional authority, the chapter highlighted the persistent tension between evolving patient expectations and entrenched clinical role structures. Although access to health information has expanded, particularly through digital channels, this shift alone has not resolved communication gaps or fundamentally altered decision-making authority, especially in adherence-related behaviors that extend beyond the clinical encounter.

To address this complexity, the study integrated four complementary theoretical frameworks—Shared Decision Making, health literacy theory, the WHO multidimensional adherence model, and the Technology Acceptance Model. Together, these frameworks provided a structured lens through which communication, patient capacity, systemic influences, and digital mediation could be examined as interdependent rather than isolated factors. Operationalizing these constructs turned abstract theory into measurable indicators, enabling empirical investigation of how power dynamics, literacy levels, and technology acceptance interact to shape adherence outcomes. This integrative

approach responds directly to gaps in prior literature, which has often examined these domains independently without sufficient attention to their interaction or cultural context.

Methodologically, the chapter justified a quantitative, panel-based research design as an appropriate means of identifying patterns and relationships across physician and patient perspectives. The use of mirrored survey instruments, stratified sampling across disease types, and third-party data collection and analysis procedures made the findings more comparable and easier to verify. At the same time, the chapter acknowledged inherent limitations related to self-reported, cross-sectional, and online survey data. Taken together, this chapter positions the study to move from theoretical grounding to empirical analysis, setting the stage for examining how communication gaps manifest in practice and how they may be addressed through context-sensitive, theory-informed interventions to improve medication adherence in Japan.

CHAPTER IV: RESULTS

4.1 Research Question One: *To identify the root causes of the patient-physician gap that exists on medication adherence in Japan.*

The survey research indicates that the patient–physician gap in medication adherence in Japan comes down to misaligned perceptions, not opposing intentions. Physicians consistently attach high importance to adherence, with over 85% rating it

strongly, yet fewer than half believe that patients adequately understand adherence-related instructions. Patients, by contrast, report very high self-assessed adherence, with more than 80% rating themselves at the top end of the scale. In other words, the two sides are working from different yardsticks: physicians evaluate adherence based on clinical expectations and outcomes, while patients assess adherence subjectively, often equating effort or intention with correct behavior. As a result, both sides believe they are aligned, yet their definitions of “good adherence” differ, allowing the gap to persist without open conflict.

A second root cause emerges from structural and interactional constraints within clinical encounters. The physician data show that more than 60% of physicians spend less than five minutes on medication counselling for new prescriptions. Within such limited time, communication tends to be unidirectional and efficiency-driven, reinforcing a physician-led model where confirmation is verbal and superficial. This structure disproportionately disadvantages patients who require reassurance, clarification, or reflection time to articulate concerns. The patient data reinforces this dynamic: although approximately one third of patients acknowledge incomplete understanding of medication instructions, many do not actively raise questions, and a significant proportion explicitly report hesitation to ask questions to preserve the physician relationship. So short visits and patient hesitation turn what could be a conversation into silent agreement, hiding the misunderstanding until it shows up as non-adherence.

The third and most critical root cause lies in the invisibility of non-adherence. One third of patients report that they do not disclose non-adherence at all, while an

additional quarter do so only when explicitly asked. Physicians, meanwhile, primarily rely on verbal confirmation rather than objective or shared behavioral records. The result is a blind spot: silence gets read as understanding, while patients independently adjust medication based on symptoms, perceived stability, or personal judgement. Importantly, this gap is not driven by lack of motivation—both groups rate adherence as highly important—but by a communication environment where deviation is socially risky to disclose and structurally difficult to surface. In the Japanese context, norms of deference and harmony make this worse, which discourage patients from openly challenging medical authority, allowing adherence problems to remain hidden rather than negotiated.

4.2 Research Question Two: *To examine three key themes: power dynamics of patient-physician relationships, role of patient literacy and role of digital in addressing the communication gap*

The survey research clearly illustrates that power dynamics within the patient–physician relationship plays a critical role in sustaining the medication-adherence communication gap in Japan. Physicians perceive patient understanding of adherence as moderate to low, whereas patients rarely challenge or contest medical instructions during consultations. Patient data reveal that a notable proportion of individuals hesitate to ask questions even when they do not fully understand medication guidance, explicitly citing concerns about maintaining a good relationship with their physician. This asymmetry reflects a physician-centered interaction model in which authority is implicitly accepted,

and silence is interpreted as comprehension. As a result, adherence discussions remain largely unidirectional, limiting opportunities for clarification, negotiation, or shared decision-making. Importantly, this power imbalance does not manifest as overt dissatisfaction, but rather as passive alignment, which conceals underlying misunderstandings until they surface as non-adherence.

Patient literacy emerges as a second, closely interrelated theme. The patient survey indicates that approximately one third of patients acknowledge incomplete understanding of medication instructions, despite rating adherence importance and self-reported adherence very highly. Difficult medical terminology and uncertainty about how to ask questions are prominent barriers. This suggests that literacy in this context is not simply a matter of knowledge or education level, but of communicative literacy—the ability to translate concerns into questions within a constrained and hierarchical consultation setting. Patients frequently compensate for partial understanding by relying on symptoms, perceived treatment stability, or personal judgment when making adherence decisions. Consequently, literacy gaps amplify the effects of power dynamics: patients who lack confidence in understanding are also less likely to seek clarification, reinforcing physician assumptions that explanations have been sufficient.

The research further highlights that digital tools remain an underutilized enabler of communication, rather than a solution. Despite widespread availability of adherence support technologies, over half of patients report not using any tools to track or manage medication intake. Where digital tools are used, they tend to function as private self-management aids rather than shared communication platforms. From a physician

perspective, adherence assessment continues to rely predominantly on verbal confirmation, reinforcing the same hierarchical and assumption-driven patterns observed in face-to-face interactions. The implication is that digital solutions have not yet been positioned to disrupt existing power dynamics or compensate for literacy limitations. Without intentional design that enables shared visibility of real-world medication behavior and legitimizes discussion of deviations, digital interventions risk reproducing the same communication failures in a technological form rather than resolving them.

4.3 Research Question Three: *To assess the impact on how much of the Japanese culture and its heritage is the root cause of the patient-physician power dynamics.*

The findings from the survey research suggest that Japanese culture and heritage play a significant but not deterministic role in shaping patient–physician power dynamics related to medication adherence. Patient responses indicate a strong tendency to avoid actions that could disrupt relational harmony, such as questioning physicians or openly admitting non-adherence. Among patients who reported incomplete understanding of medication instructions, a meaningful proportion cited hesitation to ask questions to preserve the relationship with their physician. This behavioral pattern aligns with cultural norms emphasizing respect for authority, avoidance of confrontation, and maintenance of social harmony. In this context, silence functions as a culturally acceptable signal of agreement, even when comprehension is partial, reinforcing hierarchical interaction patterns without overt conflict.

However, the research also shows that Japanese culture alone does not fully explain the observed power imbalance. Physicians report limited consultation time—often less than five minutes for medication counselling—which structurally restricts opportunities for dialogue regardless of cultural context. Patients’ reluctance to speak up therefore emerges at the intersection of cultural norms and systemic constraints, rather than as a purely cultural phenomenon. Notably, patients express very high trust in physicians and high perceived importance of adherence, indicating that deference is accompanied by goodwill rather than disengagement. This suggests that Japanese cultural heritage amplifies pre-existing asymmetries in medical authority, transforming structural time pressure and expert knowledge gaps into socially reinforced silence rather than explicit negotiation.

Crucially, the research indicates that culture operates more as a multiplier of consequences than as a root cause. The same hierarchical patterns could exist in other healthcare systems, but in Japan they are more likely to persist unchallenged because non-disclosure is socially safer than disagreement. This is reflected in the high proportion of patients who do not voluntarily disclose non-adherence, despite recognizing its importance. Cultural values therefore shape how patients respond to uncertainty—by internalizing responsibility and adjusting behavior privately—rather than whether they value adherence or physician guidance. From an analytical standpoint, this implies that interventions should not aim to “overcome” Japanese culture, but rather to design communication mechanisms that work with its relational logic, enabling disclosure without requiring direct confrontation or challenge to authority.

4.4 Research Question Four: To assess the importance of patient literacy

The survey research highlights patient literacy as a central but often misunderstood determinant of medication adherence in Japan. Approximately one third of patients acknowledge that they do not fully understand physicians' explanations regarding their medication, despite reporting very high perceived importance of adherence and high self-rated adherence behavior. This disconnect suggests that patient literacy cannot be framed merely as a deficit in motivation or engagement, but rather as a gap between received information and usable understanding. Patients frequently report difficulties related to complex medical terminology and uncertainty about how to formulate questions, indicating that comprehension barriers persist even when information is technically delivered. From the physician perspective, this manifests as moderate confidence in patient understanding despite high confidence in patients' stated agreement, reinforcing the illusion that explanations have been effective.

Importantly, the data indicate that limited patient literacy does not lead to disengagement but instead drives independent interpretation and self-management. Patients who do not fully understand instructions often rely on symptoms, perceived disease stability, or personal judgement to guide medication use, particularly when adverse effects or inconvenience arise. This pattern is reflected in the reasons for intentional non-adherence identified in the patient survey, where beliefs such as "missing one or two doses is not problematic" or "my condition is stable" are prominent. These

findings suggest that literacy gaps shift decision-making away from the clinical dialogue and into the patient's private reasoning space. As a result, non-adherence becomes a rational, albeit medically uninformed, adaptation rather than an act of non-compliance, further widening the communication gap.

The importance of patient literacy therefore lies not only in improving factual understanding, but in enabling communicative confidence and shared meaning-making within the consultation. The research shows that many patients with partial understanding choose not to seek clarification, often to avoid appearing difficult or disruptive. This indicates that literacy functions at both cognitive and relational levels: patients must understand the content of medical advice and feel equipped to engage in dialogue about it. Without addressing both dimensions, improvements in information provision alone are unlikely to translate into better adherence or more transparent communication. In the Japanese context, where respect for authority and relational harmony is highly valued, enhancing patient literacy is thus critical to transforming passive acceptance into active, shared decision-making, making adherence behaviors discussable rather than silently negotiated.

4.5 Research Question Five: To share learning and insights on how best to address the communication gap

A key learning from the survey research is that the communication gap around medication adherence in Japan cannot be resolved by reinforcing the importance of

adherence, as both physicians and patients already assign very high importance to it. Instead, the gap persists because adherence-related behavior is rarely made explicit or discussable during clinical encounters. Physicians assume understanding based on patient agreement and silence, while patients—despite recognizing incomplete understanding or deviations in medication use often withhold this information unless directly prompted. This results in a form of false alignment, where both parties believe communication has been successful, even though critical information remains unshared. The insight here is that effective communication requires mechanisms that surface real-world behavior without requiring patients to directly challenge authority or admit non-compliance.

The research further highlights that communication fails at the level of interaction design rather than intent. Short consultation times, combined with hierarchical interaction patterns, favor brief confirmation over exploration. Patients who do not fully understand medication instructions frequently default to personal judgement based on symptoms or perceived stability, yet do not view this as contradicting physician advice. This suggests that adherence should be reframed as a dynamic, contextual behavior, rather than a static instruction-following task. Addressing the communication gap therefore requires a shift from explanation-centric communication to dialogue-centric communication—one that focuses on understanding how patients interpret and implement guidance in daily life, rather than assuming uniform execution.

Finally, an important insight is that psychological and cultural safety are prerequisites for transparency. Patients are more likely to conceal non-adherence when disclosure feels risky to the physician relationship, even in the absence of explicit

judgement. The findings imply that communication strategies must normalize variability and imperfection, allowing deviations to be discussed as common and manageable rather than exceptional or problematic. Academic literature on patient-centered and shared decision-making supports this conclusion, emphasizing that trust and openness are fostered when patients feel supported rather than evaluated. Consequently, the most effective approaches to closing the communication gap are those that lower the emotional and social cost of honesty, enabling adherence discussions to evolve from implicit assumptions into collaborative understanding.

4.6 Research Question Six: To provide practical solutions to help facilitate the patient-physician communication on medication adherence

Survey research indicates that the most effective ways to enhance patient–physician communication around medication adherence are those that make real-world patient behaviors visible and easier to discuss, without triggering confrontation or self-judgment. Given that roughly one third of patients do not proactively disclose non-adherence—and that physicians largely depend on verbal confirmation, introducing shared, observable behavioral artefacts become a critical intervention. Simple adherence summaries or logs, capturing recent missed, delayed, or modified doses, can act as neutral reference points in consultations. By shifting the conversation away from individual faults toward a shared understanding of how treatment is being implemented, these tools allow physicians to pose context-specific questions even within

time-constrained visits. Their primary value lies not in precise measurement, but in surfacing hidden behaviors and enabling constructive dialogue.

A second practical approach is to normalize imperfection within communication frameworks. Patient data suggest that many individuals independently adjust their medication based on symptoms or perceived stability, often without recognizing this as inconsistent with clinical guidance. Communication strategies should therefore explicitly acknowledge that partial adherence and uncertainty are common. Framing discussions in ways that validate variability—rather than emphasizing strict compliance—reduces both psychological and relational barriers to disclosure, particularly in hierarchical and harmony-oriented cultural settings. In practice, this can be operationalized through standardized, permission-based prompts or conversational cues embedded into routine consultations, encouraging patients to share deviations without concern about damaging the physician relationship. This approach is consistent with patient-centered communication evidence, which demonstrates that openness increases when patients feel supported rather than evaluated.

Finally, the research highlights the importance of reframing digital and behavioral tools as facilitators of communication rather than instruments of patient self-management. With nearly 60% of patients reporting no use of adherence tools, solutions should be designed to minimize burden while maximizing relational value. Tools that passively capture behavioral patterns or prompt brief reflection can function as conversation starters instead of monitoring mechanisms. Equally critical is physician engagement: clinicians must be equipped to interpret and meaningfully integrate these

tools into short consultations. Taken together, these findings suggest that the communication gap is less a technological issue than an interactional one. Addressing this requires pragmatic interventions that fit seamlessly into existing workflows, align with cultural norms, and translate unspoken individual reasoning into shared clinical understanding.

4.7 Summary of Findings

Across the six analyses, the patient–physician gap in medication adherence in Japan emerges as a systemic communication gap rather than a motivational deficit. Both physicians and patients place very high importance on adherence yet operate with different internal reference points: physicians evaluate adherence through clinical expectations and outcomes, while patients interpret adherence through intention, effort, and symptom perception. This misalignment is reinforced by structural constraints such as short consultation times and by relational asymmetries in which silence is interpreted as understanding. Patients frequently acknowledge partial understanding of medication instructions but refrain from seeking clarification or disclosing deviations, contributing to a state of false alignment in which misunderstandings remain hidden. Japanese cultural norms—particularly respect for authority, avoidance of confrontation, and emphasis on relational harmony—do not create this gap but amplify its persistence by making non-disclosure socially safer than dialogue.

Patient literacy and digital tools further shape this dynamic. The research shows that literacy limitations are primarily communicative rather than motivational, driving patients to independently interpret and adjust medication use rather than disengage. Digital tools, while widely available, remain underutilized and are positioned mainly as private self-management aids rather than shared communication enablers. The key learning is therefore that improving adherence outcomes requires redesigning interactional conditions: making real-world behavior visible, legitimizing imperfection, and lowering the emotional and social cost of disclosure. Practical solutions include shared adherence snapshots, permission-based conversational framing, third-object communication tools, and micro-dialogues that fit short consultations. Collectively, these approaches shift adherence discussions from implicit assumptions to collaborative understanding, aligning with Japan's cultural context while directly addressing the structural and relational roots of the communication gap.

4.8 Conclusion

In conclusion, the patient–physician gap in medication adherence in Japan is not driven by lack of motivation or awareness, but by misaligned perceptions, hierarchical communication patterns, and structural constraints embedded in routine clinical practice. Both physicians and patients place high importance on adherence yet define and assess it differently: physicians rely on clinical expectations and verbal confirmation, while patients equate adherence with intention and symptom-based judgement. Short

consultation times, combined with culturally reinforced respect for medical authority, discourage patients from disclosing incomplete understanding or deviations in medication use. As a result, non-adherence remains largely invisible, sustained by silence rather than disagreement, and reinforced by a healthcare environment that favors efficiency over dialogue.

Addressing this gap therefore requires a shift from information delivery to interaction redesign. Improving patient literacy must go beyond education to include communicative confidence, while digital and behavioral tools should be repositioned as shared conversation enablers rather than self-management obligations. Practical, culturally congruent solutions—such as shared adherence snapshots, permission-based questioning, third-object communication, and brief micro-dialogues—can lower the social and emotional cost of disclosure within short consultations. By making real-world behavior visible and safe to discuss, these approaches transform adherence from a privately negotiated behavior into a collaboratively managed process, aligning clinical goals with patients lived realities in the Japanese healthcare context.

CHAPTER V: DISCUSSION

5.1 Discussion of Results

Taken together, the findings from Research Questions One through Six indicate that the patient–physician gap in medication adherence in Japan is not a motivation

problem. It is a breakdown in how the two sides talk to each other. Both physicians and patients report high perceived importance of adherence, but interpretations of understanding and execution diverge. Physicians evaluate adherence through a clinical and risk-oriented lens, emphasizing outcomes, protocol fidelity, and biomedical consequences, while patients frame adherence through intention, effort, and symptom-based reasoning. This perceptual misalignment is the central finding of the study. It closely mirrors the pattern in the author's earlier research. Liguori (2016), in a study of patient and physician opinions on adherence to medication for hypertension and diabetes mellitus in Japan, documented a comparable divergence between how physicians and patients understood and assessed adherence behavior. The present study confirms that this misalignment persists nearly a decade later, and — critically — extends it beyond the lifestyle-disease context of the 2016 study into oncology care. The consistency of the finding across two independent studies, two distinct disease contexts, and a substantial time interval strengthens the conclusion that perceptual misalignment is not an artefact of a particular condition or moment, but a structural and enduring feature of adherence communication in the Japanese healthcare system.

Interpreted through the lens of Shared Decision Making (SDM), this divergence reflects an incomplete realization of collaborative decision-making: while information exchange occurs, genuine deliberation and the alignment of meaning remain limited. The Three-Talk Model proposed by Elwyn et al. (2012) offers a precise diagnostic vocabulary for identifying where this breakdown occurs. The model distinguishes three sequential communicative stages — Team Talk, in which a collaborative orientation is established;

Option Talk, in which treatment alternatives and their implementation are explored; and Decision Talk, in which patient preferences are elicited and incorporated. The present findings indicate that under the time constraints documented in this study — with a substantial proportion of physicians spending fewer than three minutes explaining new medications — the Option Talk and Decision Talk stages are systematically compressed or omitted altogether. What remains is a truncated interaction that retains the surface form of Team Talk, or collapses further into brief verbal confirmation, signaling collaboration without enacting its deliberative substance. The “false alignment” identified in this study is therefore not a generalized communication failure but a specific structural collapse of the deliberative core of SDM, in which the stages that would surface divergent understanding are precisely those that time pressure eliminates.

From a health literacy perspective, the findings suggest that communication challenges are not driven by information scarcity, but by variability in patients’ ability to interpret and act on information, as well as their confidence to engage in dialogue. Patients often demonstrate functional understanding while lacking the interactive or critical literacy required to interrogate, clarify, or negotiate that understanding within the consultation, leading them to reinterpret medical advice privately. This behavior aligns with the WHO Multidimensional Adherence Model (WHO, 2003), which situates adherence as the product of interacting patient, provider, therapy, and system-level factors. In the present case, patient reasoning, physician communication practices, time constraints, and cultural norms jointly reinforce a stable pattern of partial understanding and non-disclosure. The persistence of this gap cannot be attributed to any single factor; rather, it emerges from the

interaction between structural limitations in care delivery and relational dynamics within the consultation.

The role of digital tools, interpreted through the Technology Acceptance Model (TAM), further illustrates this dynamic, and warrants more precise theoretical specification than a general observation of low adoption. TAM identifies two primary determinants of technology adoption: perceived usefulness and perceived ease of use (Davis, 1989). The present findings indicate that the binding constraint is primarily perceived usefulness, and specifically usefulness to the patient–physician relationship rather than to individual self-management. Digital adherence tools are not perceived as useful for improving communication because their outputs remain invisible to physicians and never enter the consultation; they are therefore evaluated as self-management aids of marginal relevance rather than as instruments that strengthen the clinical relationship. Perceived ease of use operates as a secondary barrier, principally on the physician side, where integrating tool outputs into compressed consultations represents a genuine workflow burden. This distinction matters: it implies that improving tool usability alone will not drive adoption if the more fundamental usefulness-to-the-relationship deficit remains unaddressed. The evidence of Wu et al. (2022), who found that a mobile patient education system improved adherence specifically by enhancing patient–physician communication and patient trust, supports this interpretation: digital tools achieve impact when they strengthen the relational channel between patient and physician, and fail when they bypass it, leaving existing asymmetries in information and authority intact.

Taken together, the findings point one way: closing the gap means redesigning the encounter, not just correcting the patient. By integrating relational, cognitive, systemic, and technological perspectives, the study shows how communication conditions — rather than individuals — determine whether adherence challenges are visible and addressable in clinical practice. Medication adherence should not be treated as a binary outcome, but as a negotiated, context-dependent process that must be actively surfaced and co-interpreted. The sections that follow examine each research question in turn, sitting the specific findings within the relevant theoretical frameworks and prior empirical evidence.

5.2 Discussion of Research Question One: To identify the root causes of the patient-physician gap that exists on medication adherence in Japan

The survey research identifies perceptual misalignment between patients and physicians as a central root cause of the adherence gap; however, a critical reading suggests this misalignment is structurally produced rather than cognitively accidental. Physicians interpret adherence through clinical benchmarks and risk-based reasoning, while patients assess adherence subjectively, often equating intention, effort, or symptom stability with appropriate behavior. The finding that patients report very high self-rated adherence despite acknowledging partial misunderstanding indicates that non-adherence is not perceived by patients as deviant behavior, but as a reasonable and context-sensitive adjustment. This directly echoes and extends the findings of Liguori (2016), whose study of hypertension and diabetes patients in Japan likewise found that patients and physicians

held systematically different conceptions of what adherence meant and how it should be evaluated. That the same structural divergence appears in the present oncology and lifestyle-disease cohorts confirms that the gap is not confined to chronic lifestyle conditions where symptom feedback is weak, but persists even in oncology, where the stakes are higher. The gap, therefore, is not simply one of misunderstanding, but of competing logics of adherence that remain unarticulated during consultations across disease contexts.

A second critical root cause lies in the interactional structure of Japanese clinical encounters. The finding that most physicians spend fewer than five minutes on medication counselling highlights a systemic constraint that both creates and legitimizes abbreviated communication. Under such conditions, verbal confirmation becomes a pragmatic substitute for genuine understanding, reinforcing a superficial consensus. Interpreted through the Three-Talk Model (Elwyn et al., 2012), this is precisely the mechanism by which the deliberative stages of SDM are lost: the time required for Option Talk and Decision Talk is unavailable, and the consultation defaults to a confirmatory exchange that cannot surface divergent understanding. This structure disadvantages precisely those patients who would benefit most from dialogue — those with partial understanding, uncertainty, or ambivalence. The patient data show that many such individuals intentionally refrain from asking questions, not because of disengagement, but due to concern about relational harmony. Power dynamics are therefore reproduced not merely through authority or hierarchy, but through time scarcity

combined with culturally sanctioned silence, making the gap resilient even in the absence of overt coercion.

Finally, the invisibility of non-adherence emerges as perhaps the most consequential root cause, yet one that is easily underestimated. The high proportion of patients who do not disclose non-adherence at all indicates that adherence behavior largely remains outside the communicative field, and physicians' reliance on verbal self-report further entrenches this invisibility. This mutual non-disclosure cycle sustains what can be described as a stable but fragile equilibrium: physicians assume adherence based on affirmation, while patients assume adjustment is acceptable if outcomes appear stable. This equilibrium persists until clinical deterioration occurs, at which point adherence problems may appear sudden or inexplicable. From a critical standpoint, the root issue is not patient resistance or physician dominance, but a healthcare interaction model that lacks mechanisms for safely surfacing everyday deviations. Without addressing this structural invisibility, efforts to improve adherence are likely to remain reactive rather than preventive.

5.3 Discussion of Research Question Two: *To examine three key themes: power dynamics of patient-physician relationship, role of patient literacy and role of digital in addressing the communication gap*

The survey research positions power dynamics in the patient–physician relationship as a central explanatory theme, yet a critical interpretation suggests that power works less

through open authority than through sheer habit. Patients rarely challenge physicians, even when understanding is incomplete, and physicians interpret silence as comprehension. While this aligns with traditional hierarchical models of medical authority, the data indicate that patients are not passive or disengaged; instead, they actively internalize responsibility for managing ambiguity. This reveals a subtle but important distinction: power asymmetry does not suppress patient agency but rather redirects it into private decision-making outside the clinical conversation. Consequently, the gap is sustained not by domination or resistance, but by a tacit agreement to avoid potentially disruptive dialogue.

Patient literacy emerges as a second theme, but the findings challenge conventional assumptions that low literacy leads directly to non-adherence. Instead, the research demonstrates that patients with partial understanding still value adherence highly and attempt to act responsibly, often by relying on symptom cues or personal judgement. From a critical standpoint, this suggests that literacy deficits are compensated for rather than corrected within the patient's own reasoning processes. The problem, therefore, is not the absence of information, but the absence of co-constructed meaning. Physicians presume that explanation equates to understanding, while patients presume that partial understanding is sufficient if outcomes appear stable. This mutual presumption highlights a key limitation in education-centric approaches: improving informational clarity alone will not resolve adherence issues if patients lack the confidence or opportunity to interrogate their understanding within the consultation.

The role of digital tools, when examined critically, further underscores this interactional failure, and is most precisely understood through the Technology Acceptance

Model. Although digital solutions are often proposed as remedies for adherence problems, the survey research shows that more than half of patients do not use any adherence tools, and those who do tend to use them privately rather than relationally. Applying TAM with precision, the primary failing construct is perceived usefulness — and specifically perceived usefulness to the patient–physician relationship rather than to isolated self-management. Patients and physicians do not perceive current tools as useful for improving communication because their outputs never enter the shared space of the consultation; the tools are therefore relegated to the status of private aids of limited clinical relevance. Perceived ease of use functions as a secondary barrier, particularly for physicians who would need to integrate tool outputs into time-constrained encounters. This indicates that digital interventions have largely reproduced existing power and literacy dynamics instead of reshaping them. The evidence of Wu et al. (2022) reinforces this interpretation: their study found that a mobile patient education system improved adherence precisely by strengthening patient–physician communication and building patient trust – showing that digital tools work when they strengthen the relationship than bypass it. The implication is that the issue is not technological readiness but conceptual framing: tools are positioned as mechanisms for patient compliance rather than as mediators of conversation. Until digital solutions are embedded into communicative routines — in ways that reduce hierarchical pressure and make uncertainty discussable — their ability to address the adherence communication gap will remain limited.

5.4 Research Question Three: *To assess the impact on how much of the Japanese culture and its heritage is the root cause of the patient-physician power dynamics*

The survey research provides strong evidence that Japanese culture and heritage shape how patient-physician power dynamics are expressed, but a critical assessment indicates that culture functions more as an amplifier of existing asymmetries than as their original cause. This cultural patterning can be anchored quantitatively. Hofstede's (2001) cross-cultural framework assigns Japan a Power Distance Index score of 54, indicating a moderate-to-high societal acceptance of hierarchical authority within institutional relationships — including the clinical encounter, where the physician's professional status confers interactional power that patients are socially disinclined to challenge. Japan's exceptionally high Uncertainty Avoidance Index score of 92 further compounds this dynamic, reflecting a strong societal discomfort with ambiguity that discourages patients from openly acknowledging incomplete understanding. Patient behavior in this study — particularly hesitation to ask questions or disclose incomplete understanding — aligns closely with these cultural dimensions: patients explicitly report refraining from asking questions to preserve the physician relationship, even when comprehension is partial. Cultural values thus legitimize silence as a socially appropriate response, transforming non-disclosure into a cooperative act rather than a sign of disengagement.

This cultural characterization is given specific empirical grounding by the comparative research of Ohtaki, Ohtaki and Feters (2003), whose direct comparison of doctor–patient communication in the United States and Japan documented concrete

structural differences in consultation behavior. Their study found that Japanese consultations were characterized by shorter duration, fewer follow-up questions, a lower frequency of socio-emotional exchanges, and longer periods of silence, with greater emphasis placed on physical examination and diagnosis than on dialogue. These are not generalized cultural impressions but measured differences in the structure of clinical talk, and they provide direct empirical corroboration for the patterns of constrained patient questioning and implicit agreement observed in the present study. The convergence between Ohtaki et al.'s (2003) consultation-level findings and this study's survey-based findings strengthens the claim that silence in Japanese consultations functions as a culturally embedded communicative norm rather than as an indicator of patient satisfaction or comprehension.

However, attributing the adherence gap primarily to Japanese culture risks overstating cultural determinism and underplaying structural drivers evident in the data. Physicians' limited consultation time — often under five minutes for medication counselling — creates a communicative environment in which detailed dialogue is impractical regardless of cultural context. The patient data show that even highly motivated patients adapt silently rather than negotiate openly, indicating that culture interacts with time pressure and professional hierarchy to suppress dialogue. This interaction means that cultural norms alone cannot explain the gap; rather, they convert structural limitations into stable patterns of non-disclosure, making them appear natural and unproblematic within routine care. A further critical insight is that culture shapes how patients manage uncertainty, not whether they trust physicians or value adherence.

Patients demonstrate high trust in medical authority and high adherence-importance ratings, yet still independently adjust medication based on symptoms or perceived stability — a culturally mediated form of agency in which patients act autonomously, but privately. This implies that interventions aiming simply to “reduce hierarchy” may be culturally misaligned; more effective approaches are those that work within Japan’s relational logic, creating indirect, non-confrontational channels for disclosure rather than attempting to override deeply embedded norms of harmony and respect.

5.5 Research Question Four: To assess the importance of patient literacy

The survey research underscores patient literacy as a necessary but insufficient condition for effective medication adherence, calling into question simplistic assumptions that better understanding will automatically lead to better behavior. While approximately one third of patients report incomplete understanding of medication instructions, these same patients continue to rate adherence as highly important and often report high self-assessed adherence. This suggests that limited literacy does not manifest as disengagement or disregard for medical advice, but rather as interpretive autonomy: patients fill gaps in understanding using personal heuristics such as symptom stability, lived experience, or perceived treatment effectiveness. This challenges deficit-based models of literacy and instead positions patients as active sense-makers who operate within constrained communicative environments. The continuity of this finding with Liguori (2016), where patients similarly exercised independent judgement in

interpreting adherence guidance for chronic disease, indicates that interpretive autonomy is a durable characteristic of the Japanese patient population rather than a context-specific response.

However, the research also reveals that literacy deficits have systemic consequences when they are not surfaced through dialogue. Patients who struggle with medical terminology or who do not know how to ask questions often choose silence over clarification, particularly to preserve the physician relationship.

This behavioral adaptation is especially salient in the Japanese context, where questioning authority may be perceived as disruptive, consistent with the consultation patterns documented by Ohtaki, Ohtaki and Fetters (2003). As a result, partial understanding becomes normalized, and literacy gaps are stabilized rather than corrected. Physicians, meanwhile, infer understanding from patient agreement or lack of questioning, reinforcing a closed communication loop. Literacy is therefore not simply an individual attribute but a property of the interaction: patients may be capable of understanding, but the consultation structure does not always allow that understanding to be negotiated or verified.

The importance of patient literacy therefore lies less in information acquisition and more in enabling participatory competence — the capacity to recognize uncertainty, articulate questions, and jointly interpret guidance with clinicians. The research suggests that without this communicative dimension, even highly motivated patients may engage in rational non-adherence that remains invisible to physicians until clinical outcomes deteriorate. Initiatives focused solely on simplifying information or increasing educational

content risk overlooking this relational function of literacy. Effective interventions must instead create conditions in which patients can test, challenge, and refine their understanding in real time. In doing so, patient literacy shifts from a passive receipt of knowledge to an active component of shared clinical reasoning, making it central to closing the adherence communication gap rather than a peripheral explanatory factor.

5.6 Research Question Five: To share learning and insights on how best to address the communication gap

A central learning from the survey research is that efforts to address the adherence gap in Japan have been implicitly misdirected toward reinforcing the importance of adherence, despite this already being widely recognized by both physicians and patients. The data show that high importance does not translate into transparent communication: patients consistently rate adherence as important and self-assess their behavior positively yet simultaneously acknowledge incomplete understanding and undisclosed deviations. This reveals a key insight — that the communication gap persists not because adherence is undervalued, but because it is socially and interactionally difficult to discuss. Strategies that focus on motivation or instruction alone therefore risk addressing a problem that does not meaningfully exist, while leaving the underlying communicative barriers intact. This conclusion is reinforced by the consistency of the finding with Liguori (2016): if a decade of intervening attention to adherence importance has not closed the perceptual gap

first documented in 2016, the persistence of the gap is itself evidence that importance-focused strategies are insufficient.

The research also highlights that the gap is sustained by interaction design rather than individual intent. Short consultation times, reliance on verbal confirmation, and culturally reinforced silence converge to produce what can be described as a “communication equilibrium”: physicians move efficiently through consultations assuming understanding, while patients manage uncertainty privately to preserve harmony. Interpreted through the Three-Talk Model (Elwyn et al., 2012), this equilibrium is one in which the consultation never progresses beyond a nominal Team Talk into the deliberative work of Option Talk and Decision Talk. From a critical standpoint, this equilibrium is functional in the short term — it allows healthcare delivery to proceed smoothly — but fragile in the long term, as misunderstandings accumulate without correction. The learning here is that improving communication requires disrupting this equilibrium by creating safe, efficient ways to surface ambiguity and deviation, rather than expecting either party to change behavior unilaterally.

Finally, the findings suggest that disclosure is strongly conditioned by psychological and relational safety, an insight that is often under-acknowledged in adherence interventions. Patients’ reluctance to disclose non-adherence is not driven by fear of reprimand alone, but by concern about damaging the physician relationship or appearing troublesome — a concern that is intensified in a high power-distance, high uncertainty-avoidance cultural context (Hofstede, 2001). This implies that even well-intentioned initiatives may fail if they increase the emotional cost of honesty. The most

promising approaches are therefore those that normalize imperfection and frame adherence as a shared problem-solving process rather than an evaluative standard. Consistent with patient-centered and shared decision-making theories, communication strategies must lower the social stakes of disclosure, allowing adherence conversations to shift from implicit assumptions to collaborative sense-making without challenging deeply embedded cultural and relational norms.

5.7 Research Question Six: To provide practical solutions to help facilitate the patient-physician communication on medication adherence

The practical solutions identified in this study — shared adherence artefacts, permission-based conversational framing, and the repositioning of digital tools as communication mediators — each target a specific dimension of the structural and relational breakdown documented across the preceding research questions. Interpreting these proposed interventions through the study’s theoretical frameworks reveals both the mechanisms through which they are expected to operate and the conditions upon which their effectiveness is contingent. This analysis moves beyond the descriptive identification of solutions toward a theoretically grounded account of why each approach addresses the adherence communication gap in the way the evidence suggests, and what alternative or competing interpretations must be considered before their adoption in practice.

Through the lens of Shared Decision Making, the proposal to introduce shared adherence artefacts — simple summaries or logs capturing recent missed, modified, or

delayed doses — can be understood as a structural intervention targeting the deliberative stages of the Three-Talk Model (Elwyn et al., 2012). In the current clinical environment, the Option Talk and Decision Talk stages of SDM — in which treatment implementation is reviewed and patient experience is incorporated into ongoing care decisions — are effectively absent from routine consultations in Japan, replaced by brief verbal confirmation that functions as a proxy for genuine dialogue. A shared artefact introduces an external reference point that allows these stages to occur without requiring patients to self-initiate disclosure of non-compliant behavior, thereby lowering the interpersonal cost of transparency. Within the WHO Multidimensional Adherence Model (WHO, 2003), this intervention simultaneously addresses two dimensions: the health system and provider factor of inadequate adherence assessment practice, by replacing verbal confirmation with a shared behavioral record; and the patient-related factor of undisclosed private interpretation, by creating a legitimate, low-risk channel through which real-world medication behavior becomes visible and discussable.

The artefact's value lies not in measurement precision but in its function as a conversational enabler — one that transforms an otherwise evaluative interaction into a collaborative review of how treatment is being experienced in daily life. Permission-based conversational framing — the use of standardized, normalizing prompts that acknowledge medication adjustment as common before inviting disclosure — addresses the communicative health literacy gap that this study identifies as a central driver of the communication breakdown. Nutbeam's (2000) distinction between functional, interactive, and critical health literacy clarifies where this intervention operates: it targets interactive

literacy — the communicative confidence and social skill required to participate in clinical dialogue — rather than the functional comprehension of medication instructions that is more typically the focus of adherence education. By signaling that deviation is expected and medically understandable, permission-based framing reduces the threshold required for interactive literacy engagement: patients are not required to initiate a potentially shame-inducing disclosure but are invited to respond to a structured and neutrally worded opening. The appraisal dimension introduced by Sørensen et al. (2012) adds a further layer: such framing also supports patients' capacity to recognize their own adherence experience as legitimate clinical data worthy of sharing, rather than as evidence of personal failure. In the Japanese cultural context, where “enryo” — the social norm of restraint and self-effacement — actively suppresses unsolicited disclosure, indirect permission-giving is culturally congruent; it enables patients to accept an invitation rather than assume the social cost of initiating a sensitive exchange.

The repositioning of digital tools from patient-side compliance mechanisms to shared communication platforms that generate dialogue within and between consultations addresses the Technology Acceptance Model barriers identified in this study. Davis (1989) established that perceived usefulness — the belief that technology genuinely improves a valued outcome — is the primary determinant of sustained adoption behavior. The finding that more than half of patients report using no adherence support tools, and that physicians rely almost exclusively on verbal confirmation, indicates that current digital tools are not perceived as useful by either party in the context of shared clinical communication. Repositioning these tools as shared consultation artefacts — producing

outputs that are visible to both physician and patient and that generate clinically actionable conversation — reframes their perceived usefulness from a monitoring and self-management perspective to a communication one, directly addressing the usability barrier identified in the TAM analysis. Venkatesh et al. (2003) further identified subjective norm and social influence as significant determinants of technology adoption in professional contexts, indicating that physician adoption strategies — including peer modelling, clinical champion programs, and the embedding of shared tool use into institutional consultation norms — may be as important as tool design in achieving sustained uptake. The implication is that digital tool deployment in adherence communication must begin with physician engagement, not patient engagement: tools that patients use alone, without physician visibility, reproduce the same asymmetry they are intended to address.

Despite theoretical basis for these solutions, several competing readings need a hard look before we accept them as workable. A first challenge concerns the assumption of structural sufficiency. The interventions proposed presuppose a degree of physician receptivity and consultation flexibility that the survey evidence does not consistently support: with more than 45% of physicians spending fewer than three minutes explaining new medications, even a well-designed shared artefact or permission-based prompt may be insufficient to overcome a temporal constraint of this magnitude. From this standpoint, communication design solutions may be necessary but not sufficient, and structural healthcare reforms — including changes to consultation time allocation, reimbursement models that reward communication quality, and the systematic

integration of pharmacist-led adherence dialogue — may be prerequisite enabling conditions rather than complementary add-ons. A second competing interpretation concerns the risk of cultural reinforcement. The study argues that interventions should work within Japan's relational logic of deference and harmony; however, an alternative reading suggests that interventions designed to accommodate hierarchical deference may inadvertently stabilize the very asymmetry they seek to address. Patient empowerment approaches that explicitly cultivate patients' expectations of explanation, their right to seek clarification, and their capacity to question clinical guidance — even at the short-term cost of relational friction — may ultimately be more effective at closing the communication gap, particularly as Japan's patient population becomes more digitally engaged and more exposed to international models of patient-centered care. A third competing interpretation applies specifically to digital tools. The assumption that making adherence behavior visible will improve outcomes rests on the premise that physicians will respond to disclosed non-adherence with collaborative problem-solving rather than heightened monitoring or implicit judgement. If patients experience physician responses to visible non-adherence data as evaluative, their behavioral adaptation may be strategic rather than transparent — managing their tool inputs to present an appearance of adherence rather than reality. This risk of reactance, documented in the digital health adoption literature, constitutes a genuine hazard for interventions that prioritize visibility without concurrently establishing the relational conditions that make disclosure feel genuinely safe.

These competing interpretations do not invalidate the practical solutions this study proposes; they clarify the enabling conditions upon which effectiveness is contingent and identify the implementation risks that must be managed. Shared artefacts are most effective when consultation time allows for their integration and when physicians are trained to respond to disclosed deviation as a collaborative starting point rather than a performance deficit. Permission-based framing is most effective when it is consistently applied, culturally adapted to Japan's indirect communication norms, and structurally embedded in consultation protocols rather than used opportunistically. Digital tool repositioning is most effective when physician adoption and training precede patient engagement, and when tool design actively signals partnership rather than surveillance through every aspect of its interface. The broader implication is that no single intervention in isolation is sufficient to close the adherence communication gap documented in this study. What is required is a coordinated response across interaction design, clinical training, digital tool architecture, and structural reform — each addressing a distinct node of the systemic communication failure, and each reinforcing the others. Together, these elements would constitute not merely an improvement to individual consultations, but a redesign of the conditions under which medication adherence is negotiated, sustained, and made collaboratively visible between patients and physicians in Japan.

CHAPTER VI: SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

This dissertation examined the communication gap between patients and physicians in Japan as it relates to medication adherence, with a particular focus on how power dynamics, patient health literacy, and digital tools collectively shape communication effectiveness. While medication adherence is widely recognized as critical for achieving optimal clinical outcomes, persistent gaps in adherence remain, suggesting that informational availability alone is insufficient. By integrating quantitative survey research with established theoretical frameworks, this study sought to move beyond compliance-based explanations and to identify relational, cultural, and structural factors that sustain communication breakdowns in routine clinical practice.

The findings show that the patient-physician adherence gap in Japan is driven mainly by misaligned perceptions, not opposing intentions. Both physicians and patients place very high importance on medication adherence; however, physicians tend to underestimate patients' understanding, while patients overestimate their own adherence and comprehension. This misalignment is reinforced by short consultation times, reliance on verbal confirmation, and the limited visibility of real-world medication behavior. As a result, non-adherence frequently remains undisclosed, creating a condition of false alignment in which both parties assume mutual understanding despite persistent gaps.

The analysis further revealed that power dynamics, patient literacy, cultural norms, and digital mediation are deeply interconnected rather than independent influences. Hierarchical physician–patient relationships, combined with norms of respect for authority and avoidance of confrontation in Japanese society, discourage patients from seeking clarification or disclosing deviations. Patient literacy limitations did not result in disengagement but instead prompted private interpretation and self-management of medication use. Digital tools, while theoretically positioned to support adherence, were largely underutilized or functioned as individual self-management aids rather than shared communication enablers, thereby reproducing existing interactional gaps rather than resolving them.

Collectively, these findings recast adherence: it is a communication-design problem, not a compliance one. The study contributes to existing literature by showing how cultural context and structural constraints combine to stabilize non-disclosure, even in the presence of high motivation and trust. By empirically linking power dynamics, communicative health literacy, and the limited relational integration of digital tools, the research extends shared decision-making and health literacy frameworks within the Japanese healthcare context.

These insights highlight the need to redesign communication conditions rather than simply increase information provision or patient accountability. The following sections build on these findings to explore practical implications for healthcare professionals, policymakers, and industry stakeholders, and to propose evidence-based,

culturally congruent strategies to facilitate more transparent and supportive patient–physician communication around medication adherence.

6.2 Implications & Practical Recommendations

The findings of this study carry implications that extend beyond conceptual reframing into specific, actionable recommendations for the stakeholders responsible for medication adherence in Japan. The sections that follow translate the study’s central conclusion — that adherence is a communication and interaction design challenge rather than a problem of individual patient compliance — into concrete proposals for clinical practice, healthcare organizations, health literacy support, digital health design, and healthcare policy. Each recommendation is grounded in the study’s empirical findings and, where applicable, in established evidence regarding the effectiveness of the proposed intervention.

6.2.1 For Clinical Practice

The findings of this dissertation carry important implications for how medication adherence is understood and addressed within the Japanese healthcare system. The results challenge the dominant tendency to frame adherence primarily as an individual patient’s behavior or motivational issue. Despite very high perceived importance of adherence among both physicians and patients, communication gaps persist, suggesting that

improving adherence outcomes requires a real shift in emphasis — from educating or persuading patients to redesigning the communication conditions under which adherence is discussed. In practical terms, adherence should be treated as a shared, ongoing communicative process rather than a one-time instruction delivered during a clinical encounter. The recommendations below specify how physicians can operationalize this shift within the constraints of routine practice.

The first specific recommendation is the routine adoption of the teach-back method during medication counselling. Rather than concluding a new prescription explanation by asking whether the patient has understood — a closed question that, in a high power-distance context, predictably elicits affirmation regardless of actual comprehension — physicians should ask patients to restate the medication regimen and its purpose in their own words. This simple reformulation makes patient understanding visible within the consultation itself, allowing misunderstandings to be identified and corrected before they translate into non-adherence. Evidence for the effectiveness of teach-back is well established: Schillinger et al. (2003) found that physicians who applied teach-back with patients who had low health literacy achieved significantly better clinical outcomes, and a subsequent systematic review by Ha Dinh et al. (2016) confirmed that the teach-back method improves disease-specific knowledge, adherence, and self-management across a range of chronic conditions. This recommendation directly addresses the study's finding that approximately one third of patients report incomplete understanding of medication instructions yet do not signal this within the consultation.

Critically, teach-back is well suited to the time-constrained Japanese consultation, as it adds only seconds to an explanation while making it far more reliable.

The second recommendation is the use of structured, open-ended, and explicitly normalizing questions during medication reviews. Because the study identifies non-disclosure as a central mechanism sustaining the adherence gap — with a substantial proportion of patients not volunteering information about missed or altered doses — physicians should adopt a standardized question set designed to lower the social cost of honest disclosure. A practical example is: “Since your last visit, have there been times when you took your medication differently from how it was prescribed? That is very common — could you tell me about those times?” The normalizing preface (“That is very common”) signals that deviation is expected and medically understandable rather than a failure to be judged, while the open-ended structure invites narrative rather than a yes/no response. This permission-based framing is particularly well suited to the Japanese cultural context, where norms of restraint and deference discourage patients from initiating sensitive disclosures: it allows the patient to respond to an invitation rather than assume the relational risk of raising non-adherence unprompted. Embedding such questions as a routine element of every return consultation would convert disclosure from an exceptional act into a normal feature of clinical dialogue.

6.2.2 For Healthcare Organizations

The findings indicate that physician-led communication models, when combined with short consultation times, unintentionally reinforce patient silence and non-disclosure. This silence should not be interpreted as disengagement or passivity, but as a relationally and culturally adaptive behavior. For healthcare organizations, this implies that power is exercised less through overt authority and more through consultation structure, time allocation, and implicit expectations around questioning. Interventions that aim solely to empower patients without addressing these structural features are therefore unlikely to succeed. Instead, healthcare organizations must consider how the design of care delivery can proactively invite dialogue without requiring patients to directly challenge medical authority. Two organizational reforms follow directly from this conclusion.

The first recommendation is the systematic expansion of the pharmacist's role as a dedicated adherence communication partner operating between physician consultations. The structural constraint of short physician consultation times is unlikely to be fully resolved within the existing care model; however, Japan's pharmacies are an underused resource for addressing it. The external pharmacy system (*monzen yakkyoku*) and the family pharmacist (*kakaritsuke*) framework already position community pharmacists in regular contact with patients, frequently with greater available time for dialogue than physicians. Healthcare organizations should formally integrate pharmacists into the adherence communication pathway — for example, by tasking them with structured

adherence check-ins at the point of dispensing, the use of teach-back and normalizing questions equivalent to those recommended for physicians, and the systematic communication of identified adherence concerns back to the prescribing physician. This distributed model would create additional, lower-pressure opportunities for patients to surface uncertainty and deviation outside the time-constrained physician encounter, while ensuring that the information generated re-enters the clinical record rather than remaining siloed in the pharmacy.

The second recommendation is the integration of structured adherence prompts into electronic medical record (EMR) systems. The study finds that physicians rely predominantly on verbal confirmation to assess adherence, and that adherence discussion is frequently treated as an optional rather than a routine element of the consultation. Healthcare organizations should incorporate a structured adherence check field into the EMR return-visit workflow — a brief, mandatory prompt that requires the physician to record whether adherence was discussed and whether any deviations were reported at each return visit. By embedding adherence enquiry into the standard clinical workflow, this reform would convert adherence discussion from a discretionary exchange dependent on individual physician initiative into a consistent, system-supported feature of routine care. Such structured prompts would also generate longitudinal adherence documentation, supporting continuity of communication across visits and between members of the care team.

6.2.3 For Health Literacy

The results have significant implications for how patient health literacy is conceptualized and supported in practice. The data show that limited understanding does not stop patients from acting; rather, it redirects decision-making into private reasoning based on symptoms, perceived stability, or personal judgement. This highlights the limitation of approaches that focus narrowly on simplifying information or increasing educational content. Patient literacy should instead be understood as a communicative and relational capability, encompassing not only comprehension but also the confidence and opportunity to articulate uncertainty (Nutbeam, 2000). Healthcare systems that seek to improve adherence must therefore create environments in which patients can safely express incomplete understanding and negotiate interpretations of treatment instructions.

Operationally, this implies a dual focus on the clarity of information and on the interactional conditions that enable its use. On the information side, organizations should provide plain-language medication materials that complement verbal explanation, reducing the cognitive load placed on patients during brief consultations. More importantly, the teach-back and normalizing-question techniques recommended for physicians' function simultaneously as health literacy interventions: by surfacing the gap between received and usable understanding, they directly target the interactive dimension of health literacy that this study identifies as decisive. Given that patients increasingly seek medication information through digital channels, attention should also extend to eHealth literacy — supporting patients' capacity to appraise the reliability of online

health information, consistent with the appraisal dimension of contemporary health literacy frameworks (Sørensen et al., 2012). Equipping clinical and pharmacy staff with basic health literacy training — including awareness that patient affirmation is an unreliable indicator of comprehension in high power-distance settings — would further embed these capabilities across the care pathway.

6.2.4 For Digital Health Tools

Digital health tools present a further set of implications. While such tools are often promoted as solutions to adherence problems, this study shows that their impact remains limited when they function primarily as patient-side self-management aids. When digital tools do not meaningfully enter the physician–patient interaction, they risk reinforcing existing asymmetries by increasing patient responsibility without increasing shared understanding. The implication for technology developers and industry stakeholders is that digital solutions should be designed and implemented as communication mediators, not monitoring or compliance devices. The recommendations below translate this principle into specific design and delivery requirements.

Three design principles should govern the development of adherence-support tools intended for the Japanese context. First, shared visibility: the tool should generate a concise summary of real-world medication behavior that is viewable by both the patient and the physician, rather than confining data to a private patient-facing interface. This shared artefact provides the neutral reference point around which adherence dialogue can

occur. Second, non-judgmental framing: the tool's language and visual design should normalize deviation as a common and manageable aspect of treatment rather than flagging missed doses as failures, thereby lowering the psychological cost of disclosure that this study identifies as a barrier to transparency. Third, physician workflow integration: the tool should surface its outputs within the systems physicians already use — ideally within the EMR or on the consultation screen — rather than requiring physicians to open and navigate a separate application. This principle directly addresses the perceived ease-of-use barrier identified in the study's Technology Acceptance Model analysis, in which workflow disruption on the physician side undermines adoption.

A further recommendation concerns the delivery channel. The study's Technology Acceptance Model analysis indicates that adoption is constrained both by perceived usefulness and by ease of use, and that standalone applications requiring separate download and registration face high adoption barriers. In the Japanese market, the messaging platform LINE is the dominant mobile communication channel, with smartphone reach reported at approximately 70% of users (LINE Corporation, 2023). Rather than developing standalone applications, solution providers should consider delivering adherence check-ins and reminders through a LINE-based chatbot interface, embedding the intervention within a platform that patients already use daily. This approach substantially lowers the ease-of-use barrier by eliminating the need to adopt an unfamiliar application and increases the likelihood of sustained engagement. Combined with the shared-visibility and physician-integration principles above, a LINE-based

delivery model could function as a culturally and behaviorally congruent vehicle for the communication-mediating tools this study recommends.

6.2.5 For Healthcare Policy

The findings have broader implications for healthcare policy and system-level design in Japan. Cultural norms of respect for authority and relational harmony do not inherently prevent effective communication, but they do amplify the consequences of structural constraints such as limited consultation time and fragmented communication responsibilities. Policy initiatives that promote patient-centered care or shared decision-making must therefore be accompanied by practical reforms that support these principles in everyday practice. Without such alignment, adherence-related communication gaps are likely to persist, even as expectations for patient engagement continue to rise.

The most direct policy lever concerns the structure of physician remuneration. Japan's prevailing payment structures, including the Diagnosis Procedure Combination (DPC) system, are oriented toward patient throughput and procedural activity, creating an implicit disincentive for the time-intensive communication that effective adherence support requires. A realistic and targeted reform within the existing National Health Insurance framework would be the introduction of a supplementary adherence counselling fee that remunerates physicians for conducting structured adherence dialogues at defined points in treatment. Such a fee would have clear precedent in the Japanese system, which already remunerates pharmacists for medication management

and guidance services; extending an analogous mechanism to physician-led adherence counselling would directly reward the communicative work that current throughput-oriented incentives discourage. By attaching financial value to communication quality rather than volume alone, this would line up day-to-day incentives with the patient-centered goals policy continues to call for.

Beyond fee reform, policymakers should support the structural integration of communication responsibilities across the care team. This includes formalizing the division of adherence communication roles between physicians and pharmacists — building on the family pharmacist framework — and establishing communication quality, rather than throughput alone, as a recognized dimension of care quality within national healthcare standards. Incorporating adherence communication into professional training requirements and continuing medical education would further support the systemic adoption of the practices recommended in this chapter. Together, these policy measures would create enabling conditions under which the clinical, organizational, and technological recommendations of this study could be sustained at scale, rather than depending on the initiative of individual practitioners.

6.3 Recommendations for Future Research

While this study provides valuable insights into patient–physician communication gaps related to medication adherence in Japan, several limitations and emerging questions point to clear opportunities for future research. First, the cross-sectional nature of

quantitative survey research restricts the ability to examine how communication patterns, adherence behavior, and disclosure evolve over time. Future studies should therefore adopt longitudinal research designs to explore how adherence communication changes across different stages of treatment, disease progression, or physician–patient relationship maturity. Longitudinal approaches would allow researchers to assess whether improvements in communication lead to sustained changes in adherence behavior, or whether communication gaps emerge as treatment becomes routine.

Second, while the present study intentionally employed a quantitative design to identify systematic patterns across large samples, future research would benefit from mixed-method or qualitative approaches to deepen understanding of underlying mechanisms. In-depth interviews, ethnographic observation, or conversation analysis of clinical encounters could provide richer insight into how silence, hesitation, and implicit agreement operate in real time. Such methods would be particularly valuable in unpacking culturally nuanced behaviors—such as indirect communication and deference to authority—that are difficult to fully capture through survey instruments alone. Combining qualitative insights with quantitative patterns would strengthen explanatory depth and theory development.

Third, future research should further investigate heterogeneity across clinical contexts and patient populations. Although this study compared oncology and lifestyle-related disease groups, additional segmentation by age, treatment complexity, disease severity, and care setting (e.g., tertiary hospitals versus community clinics) may reveal important variations in communication dynamics. Research focusing on elderly

populations, multimorbid patients, or individuals with lower baseline health literacy could clarify whether the observed communication gaps are amplified under conditions of greater vulnerability. Comparative studies involving other East Asian healthcare systems may also help distinguish which findings are culturally specific to Japan and which reflect broader regional patterns.

A fourth area for future research concerns the design, implementation, and evaluation of communication-focused digital interventions. Rather than assessing digital tools solely in terms of adoption or adherence outcomes, future studies should examine how such tools reshape interactional processes between patients and physicians. Experimental or pilot studies testing shared adherence summaries, consultation-integrated digital prompts, or pharmacist-mediated digital communication models could provide evidence on whether these tools successfully lower the psychological cost of disclosure and improve mutual understanding. Incorporating behavioral and communication outcomes, alongside adherence metrics, would allow a more nuanced evaluation of digital intervention effectiveness.

A fifth area for future research should more explicitly examine system-level and policy influences on adherence communication. Comparative studies evaluating differences in consultation time allocation, reimbursement models, and role division between physicians and pharmacists could illuminate structural levers for improving communication quality. In addition, research exploring how professional training in communication, shared decision-making, and health literacy impacts clinical practice would be valuable in bridging the gap between policy aspirations and everyday care

delivery. Such work would support the development of scalable, system-aligned strategies for improving patient–physician communication and medication adherence in Japan and beyond.

Finally, while this study identifies shared adherence summaries and permission-based questioning as promising approaches, there remains a need for more rigorous empirical validation to determine their effectiveness in real-world clinical settings. Future research should move beyond descriptive and exploratory findings to systematically examine whether these interventions can meaningfully improve both disclosure behaviors and downstream adherence outcomes. This requires careful consideration of study design, including how such tools are integrated into routine workflows, how both patients and physicians engage with them over time, and whether observed effects are sustained beyond initial implementation. Expanding the scope of investigation to include different therapeutic areas, patient populations, and cultural contexts would also be critical to assess generalizability and ensure that proposed solutions are robust across diverse healthcare environments.

6.4 Conclusion

This dissertation set out to examine the communication gap between patients and physicians in Japan as it relates to medication adherence, moving beyond traditional explanations centered on patient motivation or compliance. Through the integration of quantitative survey research and established theoretical frameworks, the study

demonstrates that adherence challenges persist not because adherence is undervalued, but because it is insufficiently and unevenly communicated within routine clinical interactions. Misaligned perceptions, structural time constraints, and the limited visibility of real-world medication behavior collectively create a context in which uncertainty and deviation remain largely undisclosed.

The findings highlight that patient–physician communication around medication adherence is shaped by a complex interplay of power dynamics, patient health literacy, cultural norms, and the design of communication tools. In the Japanese healthcare context, hierarchical relationships and norms of relational harmony do not eliminate patient agency but rather redirect it into private interpretation and self-management. Patients frequently act responsibly and intentionally, yet do so outside the clinical dialogue, while physicians rely on silence and verbal confirmation as proxies for understanding. This dynamic produces a stable but fragile communication equilibrium that masks adherence problems until they manifest clinically.

By empirically linking these interactional and cultural factors, this study contributes to the literature on medication adherence, shared decision-making, and health literacy in several important ways. It reframes adherence as a communication and interaction design issue, extends existing theoretical models by incorporating cultural and structural moderators, and demonstrates the limitations of digital tools when they are not embedded as shared communicative mediators. In doing so, the dissertation gives a clearer picture of how adherence decisions get made — or avoided — in everyday practice.

To translate these contributions into a coherent and actionable model, the recommendations developed in this chapter can be synthesized into a single integrated framework. The Communication Design Framework for Medication Adherence in Japan, presented in Table 6.1, organizes the study's recommendations across four interdependent levels. At the level of interaction, physician communication techniques — including the teach-back method, structured normalizing questions, and permission-based framing — make patient understanding and real-world behavior visible within the consultation. At the organizational level, structural and workflow reforms, such as the integration of pharmacists as adherence communication partners and the embedding of adherence prompts within electronic medical records, create the conditions for these techniques to be applied consistently. At the technological level, digital tool design principles — shared visibility, non-judgmental framing, and physician workflow integration, delivered through familiar platforms such as LINE — extend communication beyond the consultation. Finally, at the policy level, systemic and legislative enablers, including a supplementary adherence counselling fee and the formal integration of professional roles, provide the structural incentives that make the preceding levels sustainable. The central premise is that these levels are interdependent rather than alternative: no single level is sufficient in isolation, and durable improvement in medication adherence requires coordinated action across all four.

Table 6.1 Communication Design Framework for Medication Adherence in Japan



Ultimately, this research underscores that improving medication adherence requires more than better information or stronger patient accountability. It requires communication environments that make uncertainty visible, dialogue safe, and shared understanding practicable within real-world constraints. By identifying where and how communication breaks down, and by proposing culturally congruent directions for improvement, this study provides a foundation for future research and practice aimed at transforming medication adherence from a privately managed behavior into a genuinely collaborative clinical process.

In presenting the Communication Design Framework, this dissertation offers not only an analysis of why the patient–physician communication gap persists in Japan, but a practical and theoretically grounded blueprint for closing it. The framework is intended to be both diagnostic and generative: it identifies the level at which a given adherence challenge originates, and it directs attention to the complementary levels whose

alignment is necessary for any single intervention to succeed. For practitioners, healthcare leaders, technology developers, and policymakers alike, it provides a shared reference point for coordinating action across the boundaries that too often fragment adherence efforts. In this way, the study aspires to move the conversation on medication adherence in Japan beyond the identification of problems and towards the systematic design of the communicative conditions in which adherence can be openly discussed, collaboratively managed, and meaningfully improved.

APPENDIX A

ONLINE SURVEY RESEARCH QUESTIONNAIRES – FOR PHYSICIANS

Question Code	Type	Question
SCR1	Numeric	Please indicate the total number of patients you have seen in the past month (based on medical records).
SCR2-1	Numeric	Of the total number of patients seen in the past month, how many patients with lifestyle-related diseases excluding cancer are you currently treating?
SCR2-2	Numeric	Of the total number of patients seen in the past month, how many cancer patients are you currently treating?
Q1-1-1	Numeric (%)	Percentage of patients prescribed one medication.
Q1-1-2	Numeric (%)	Percentage of patients prescribed two medications.
Q1-1-3	Numeric (%)	Percentage of patients prescribed three medications.
Q1-1-4	Numeric (%)	Percentage of patients prescribed four medications.
Q1-2	Numeric	Average number of medications prescribed per patient.
Q2	Single answer	What is the average amount of time you spend seeing one outpatient per visit?
Q3	Single answer	When prescribing a new medication, how much time do you typically spend on medication counselling?
Q4	Single answer	Do you mainly work at a clinic or a hospital?
Q4SQ-1-1-1	Numeric (%)	In a clinic (in-house), what percentage of medication counselling is provided by the physician?
Q4SQ-1-1-2	Numeric (%)	In a clinic (in-house), what percentage of medication counselling is provided by a pharmacist?
Q4SQ-1-1-3	Numeric (%)	In a clinic (inhouse), what percentage of medication counselling is provided by a nurse?
Q4SQ-1-1-4	Numeric (%)	In a clinic (in-house), what percentage of medication counselling is provided by administrative staff?

Q4SQ-1-1-5	Numeric (%)	In a clinic (inhouse), what percentage of medication counselling is provided by others?
Q4SQ-1-2-1	Numeric (%)	In a clinic (external pharmacy), what percentage of medication counselling is provided by the physician?
Q4SQ-1-2-2	Numeric (%)	In a clinic (external pharmacy), what percentage of medication counselling is provided by a pharmacist?
Q4SQ-2-1-1	Numeric (%)	In a hospital outpatient setting, what percentage of medication counselling is provided by the physician?
Q4SQ-2-1-2	Numeric (%)	In a hospital outpatient setting, what percentage of medication counselling is provided by a pharmacist?
Q4SQ-2-1-3	Numeric (%)	In a hospital outpatient setting, what percentage of medication counselling is provided by a nurse?
Q4SQ-2-2-1	Numeric (%)	In a hospital inpatient setting, what percentage of medication counselling is provided by the physician?
Q4SQ-2-2-2	Numeric (%)	In a hospital inpatient setting, what percentage of medication counselling is provided by a pharmacist?
Q4SQ-2-3-1	Numeric (%)	In a hospital (external pharmacy), what percentage of medication counselling is provided by the physician?
Q4SQ-2-3-2	Numeric (%)	In a hospital (external pharmacy), what percentage of medication counselling is provided by a pharmacist?
Q5-1-1	Single answer	How would you rate your own awareness of the importance of medication adherence?
Q5-1-2	Single answer	How aware are you of explaining the importance of medication adherence during consultations?
Q5-2-1	Single answer	How aware do you think your patients are of the importance of medication adherence?
Q5-2-2	Single answer	How well do you think your patients understand medication adherence during consultations?
Q6	Multiple answer	In your opinion, what are the reasons some patients have low understanding, interest, or cooperation regarding medication adherence?
Q6t	Free text	Other reasons for low understanding or cooperation (please specify).
Q7-1-1	Numeric (%)	Percentage of patients who generally do not forget to take medication.
Q7-1-2	Numeric (%)	Percentage of patients who sometimes forget to take medication.

Q7-1-3	Numeric (%)	Percentage of patients who intentionally do not take medication based on their own judgement.
Q7-2	Numeric	Estimated number of days of leftover medication assuming a 30-day prescription.
Q8	Multiple answer	What do you believe are the reasons for intentional non-adherence among patients?
Q8t	Free text	Other reasons for intentional non-adherence (please specify).
Q9	Multiple answer	What background factors do you believe contribute to poor medication adherence?
Q9t	Free text	Other background factors (please specify).
Q10	Multiple answer	How do you check for leftover medication?
Q10t	Free text	Other methods for checking leftover medication (please specify).
Q11	Single answer	How satisfied are you with your current approach to handling leftover medication?
Q12t	Free text	How do you currently explain medication adherence to patients?
Q13t	Free text	What initiatives do you plan to implement in the future to improve medication adherence?
Q14t	Free text	Are there any digital services or tools you believe are needed to help patients better understand the importance of medication adherence?
Q15t	Free text	What do you think should be done to help patients better understand the importance of medication adherence?

APPENDIX B

ONLINE SURVEY RESEARCH QUESTIONNAIRES – FOR PATIENTS

Question Code	Type	Question
SC1	Multiple answer	Which disease(s) are you currently visiting a medical institution for on a regular basis and receiving treatment?
Q1	Multiple answer	What type(s) of medical institution are you currently visiting?
Q1t	Free text	Other medical institution (please specify).
Q2	Single answer	How many types of medication are you currently taking?
Q3-1	Multiple answer	When you receive a prescription, who provides you with medication counselling (explanation of the medication and how to take it)?
Q3-2	Single answer	Of those listed above, who mainly provides the medication explanation to you?
Q4-1	Single answer	How important do you think medication adherence (continuing to take medication as prescribed) is?
Q4-2	Single answer	To what extent do you feel you are adhering to your prescribed medication?
Q5	Single answer	When you receive medication counselling from your physician, do you understand all the content?
Q6	Multiple answer	What are the reasons why you do not fully understand the medication counselling provided by your physician?
Q6t	Free text	Other reasons (please specify).
Q6-1t	Free text	What tools would help you better understand the importance of medication adherence when consulting with your physician?
Q7-1	Numeric (%)	Percentage of prescribed medications that you forget to take.
Q7-2	Numeric (%)	Percentage of prescribed medications that you do not take intentionally based on your own judgement.
Q7-3	Numeric (%)	Percentage of prescribed medications that you take at a timing different from what was instructed.

Q8	Multiple answer	You indicated that you sometimes forget to take medication. What are the reasons for this?
Q8t	Free text	Other reasons for forgetting medication (please specify).
Q9	Multiple answer	You indicated that you sometimes choose not to take medication based on your own judgement. What are the reasons for this?
Q9t	Free text	Other reasons for intentionally not taking medication (please specify).
Q10	Single answer	When visiting a medical institution, do you inform your physician about medications you have not taken?
Q11	Multiple answer	When you have leftover medication, how does your physician respond?
Q11t	Free text	Other physician responses (please specify).
Q12	Multiple answer	What measures do you personally take to prevent forgetting to take your medication?
Q12t	Free text	Other preventive measures (please specify).
Q13	Single answer	Overall, how well do you think you are managing measures to prevent missed doses?
Q14	Single answer	If a physician suggests changing your medication but you do not want to change it, how would you express your opinion?
Q15t	Free text	Please explain why you would not clearly tell your physician that you do not want to change the medication.

APPENDIX C

ONLINE SURVEY RESEARCH RESULTS – PHYSICIANS (N=60)

Physician perceptions of medication adherence and patient understanding

Measure	Scale / Category	Result
Importance of medication adherence	$\geq 7/10$	86.7%
	8–10/10	56.7%
Perceived patient understanding of adherence	$\geq 7/10$	48.3%
	$\leq 5/10$	25.0%
Perceived gap between importance and understanding	Qualitative	High

Consultation time and capacity constraints

Measure	Category	Percentage
Average outpatient consultation time	3–5 minutes	38.3%
	5–10 minutes	50.0%
Time spent explaining new medication	<3 minutes	45.0%
	3–5 minutes	16.7%
	≥ 5 minutes	38.3%

Physician-perceived reasons for poor adherence

(Multiple responses allowed)

Reason	% of physicians selecting
Patients do not fully understand explanations	61.7%
Symptoms do not worsen even if doses are missed	55.0%
Insufficient time for explanation	30.0%
Patients trust internet / SNS information	15.0%

Physician estimates of patient adherence behavior

Estimated patient group	Proportion
Generally adherent / rarely forget	48.3%
Sometimes forget doses	32.8%
Intentionally skip medication	18.9%

Leftover medication management (physician practice)

Practice	Percentage
Rely on verbal confirmation	60.0%
Ask patients to bring leftover medication	33.3%
Satisfied with current approach	35.0%
Neutral	48.3%
Dissatisfied	16.7%

Summary of Key Findings

Physicians demonstrate a strong recognition of the importance of medication adherence, with 86.7% rating it $\geq 7/10$ and 56.7% assigning it a high score of 8–10/10. However, this contrasts sharply with their perception of patient understanding: only 48.3% believe patients have an adequate understanding ($\geq 7/10$), while one in four (25.0%) rates understanding at $\leq 5/10$, pointing to a substantial perception gap. This misalignment is further reflected in physicians' attribution of poor adherence, where 61.7% identify inadequate patient understanding as the primary driver, followed by 55.0% citing the absence of immediate symptoms worsening when doses are missed. Physicians estimate that adherence behavior is heterogeneous, with 48.3% of patients

considered fully adherent, while a combined 51.7% exhibit either unintentional (32.8%) or intentional (18.9%) non-adherence. Despite this, adherence assessment remains largely indirect and subjective, as 60.0% of physicians rely solely on verbal confirmation, indicating a structural reliance on self-reported data.

These challenges are compounded by significant operational constraints within routine clinical practice. Consultation time is limited, with 88.3% of outpatient visits lasting under 10 minutes, including 38.3% restricted to just 3–5 minutes. Within this compressed timeframe, nearly half of physicians (45.0%) spend less than 3 minutes explaining new medications, which limit opportunities for effective patient education and mutual understanding. While some physicians adopt additional measures—such as requesting patients to bring leftover medications (33.3%)—overall satisfaction with current adherence management practices remains modest, with only 35.0% expressing satisfaction, compared to 65.0% reporting neutral or negative views. Collectively, these findings highlight a system characterized by high perceived importance ($\geq 86\%$) but constrained communication capacity, where time limitations and overreliance on verbal reporting contribute to a persistent gap between adherence expectations and real-world patient behavior.

APPENDIX D

ONLINE SURVEY RESEARCH RESULTS –PATIENTS (N=200)

Patient views on adherence importance and self-assessment

Measure	Result
Importance of adherence rated $\geq 9/10$	82.0%
Rated 10/10	57.5%
Self-rated adherence $\geq 9/10$	86.5%
Self-rated adherence $\leq 3/10$	3.0%

Patient understanding of physician explanations.

Level of understanding	Percentage
Understand everything	67.0%
Mostly understand, but not fully	31.5%
Do not understand well	1.5%

Reasons for incomplete understanding

(Among patients with partial or poor understanding, n = 66; multiple responses allowed)

Reason	Percentage
Medical terminology is difficult	30.3%
Do not know how to ask questions	24.2%
Believe partial understanding is not a problem	33.3%
Hesitant to ask to preserve relationship	13.6%

Actual adherence behavior (self-reported)

Indicator	Result
Mean forgotten doses	~11%
Mean intentional skipped doses	~5%
Never forget doses	59.0%
Never intentionally skip	83.0%

Reasons for forgetting medication.

(Multiple responses allowed)

Reason	Percentage
Simply forgot	91.5%
Complex timing / frequency	15.9%
Lack of understanding	2.4%

Reasons for intentional non-adherence

Reason	Percentage
1–2 missed doses are not problematic	44.1%
Condition is stable	38.2%
Side effects	20.6%

Disclosure of non-adherence to physicians

Disclosure behavior	Percentage
Proactively disclose	36.2%
Disclose only if asked	26.6%
Do not disclose at all	33.0%

Use of adherence support tools

Tool	Percentage
Pill case	28.5%
Calendar	7.0%
Family support	2.5%
No tools used	58.5%

Summary of Key Findings

From the patient perspective, adherence is perceived as highly important and consistently well-managed. Specifically, 82.0% of patients rate adherence importance at $\geq 9/10$, with 57.5% assigning the maximum score (10/10). This strong recognition is mirrored in self-assessment, where 86.5% rate their own adherence at $\geq 9/10$, and only 3.0% report very low adherence ($\leq 3/10$). Similarly, patients report high levels of understanding of physician explanations, with 67.0% stating they fully understand and an additional 31.5% indicating partial understanding. However, among those with incomplete understanding, several structural and psychological barriers emerge: 33.3% believe partial understanding is sufficient, 30.3% cite difficulty with medical terminology, and 24.2% do not know how to ask questions. These findings suggest that while overall confidence is high, a non-trivial proportion of patients operate with incomplete or unverified understanding, often without perceiving it as problematic.

The gap between perceived and actual behavior is also evident. Self-reported data indicate an average of ~11% missed doses and ~5% intentional dose skipping, despite 59.0% reporting they “never forget” and 83.0% stating they “never intentionally skip” medication. Behavioral drivers further highlight this discrepancy: while 91.5% attribute missed doses to simple forgetfulness, intentional non-adherence is often rationalized,

with 44.1% believing that missing 1–2 doses is not problematic and 38.2% citing stable condition as justification. Notably, non-adherence remains partially hidden within the clinical interaction, as only 36.2% of patients proactively disclose, while 33.0% do not disclose at all. At the same time, 58.5% of patients report not using any adherence support tools, indicating limited use of structured self-management aids. Taken together, these findings point to a pattern of high perceived adherence coupled with measurable behavioral deviations and low transparency, suggesting that adherence challenges are rooted less in motivation and more in cognitive biases, behavioral habits, and communication gaps.

APPENDIX E

SUMMARY OF KEY PHYSICIAN-PATIENT GAPS

Dimension	Physicians	Patients
Importance of adherence	Very high	Very high
Confidence in understanding	Moderate	High
Disclosure of non-adherence	Expected	Often withheld
Use of support tools	Expected	Low actual usage

APPENDIX F

SUBGROUP COMPARISONS: PHYSICIAN AND PATIENT SURVEYS

Practice context and consultation time

Measure	Category	Lifestyle physicians (%)	Oncology physicians (%)
Primary workplace	Clinic	40.0	6.7
Primary workplace	Hospital	60.0	93.3
Avg consultation time	<3 min	3.3	0.0
Avg consultation time	3–5 min	43.3	33.3
Avg consultation time	5–10 min	46.7	53.3
Avg consultation time	10–20 min	6.7	13.3
Time for new Rx explanation	<3 min	56.7	33.3
Time for new Rx explanation	3–5 min	16.7	16.7
Time for new Rx explanation	5–10 min	26.7	43.3
Time for new Rx explanation	10–20 min	0.0	6.7

Average number of prescribed medications

Number of medications	Lifestyle physicians (%)	Oncology physicians (%)
1 drug	3.3	0.0
2 drugs	23.3	10.0
3 drugs	50.0	33.3
4 drugs	16.7	26.7
5 or more drugs	6.7	30.0

Physician ratings (10-point scale distributions)

Measure	Score	Lifestyle physicians (%)	Oncology physicians (%)
Importance of adherence	6	6.7	33.3
Importance of adherence	7	46.7	23.3
Importance of adherence	8	16.7	16.7
Importance of adherence	9	6.7	3.3
Importance of adherence	10	13.3	16.7
Patient importance (perceived)	5	20.0	6.7
Patient understanding (perceived)	5	33.3	13.3
Patient understanding (perceived)	7	33.3	30.0
Patient understanding (perceived)	9–10	6.6	13.3

Physician-perceived reasons for poor adherence
(Multiple responses allowed)

Reason	Lifestyle physicians (%)	Oncology physicians (%)
Patient does not understand explanations	70.0	53.3
Symptoms do not worsen even if missed	56.7	53.3
Not enough time to explain	33.3	26.7
Trust in internet/SNS	20.0	10.0
Patients cannot consult doctor freely	16.7	20.0

Handling of leftover medication

Measure	Category	Lifestyle physicians (%)	Oncology physicians (%)
Check method	Verbal confirmation	60.0	60.0
Check method	Ask patient to bring meds	36.7	30.0
Satisfaction	Satisfied (total)	30.0	40.0
Satisfaction	Neutral	46.7	50.0
Satisfaction	Dissatisfied (total)	23.3	10.0

Care setting and medication burden

Measure	Category	Lifestyle patients (%)	Cancer patients (%)
Care setting	Clinic	81.0	16.0
Care setting	General hospital	18.0	43.0
Care setting	University / national hospital	11.0	53.0
Number of medications	1	21.0	47.0
Number of medications	3 or more	60.0	32.0

Adherence importance and self-rated adherence

Measure	Score	Lifestyle patients (%)	Cancer patients (%)
Importance of adherence	10	54.0	61.0
Importance of adherence	≥9	68.0	68.0
Self-rated adherence	10	56.0	59.0
Self-rated adherence	≥9	77.0	77.0

Understanding of physician explanations

Understanding level	Lifestyle patients (%)	Cancer patients (%)
Understand everything	71.0	63.0
Mostly understand	29.0	34.0

Understanding level	Lifestyle patients (%)	Cancer patients (%)
Do not understand well	0.0	3.0

Reasons for incomplete understanding

(subsample only; multiple response)

Reason	Lifestyle patients (%)	Cancer patients (%)
Terminology difficult	24.1	35.1
Do not know how to ask questions	10.3	35.1
Hesitant to ask (relationship)	13.8	13.5
Believe gaps not problematic	37.9	29.7

Non-adherence behavior

Forgetting doses

Category	Lifestyle patients (%)	Cancer patients (%)
Never forget	55.0	63.0
Forget $\geq 10\%$ of doses	11.0	14.0

Intentional skipping

Category	Lifestyle patients (%)	Cancer patients (%)
Never intentionally skip	85.0	81.0

Category	Lifestyle patients (%)	Cancer patients (%)
Skip $\geq 10\%$ intentionally	7.0	11.0

Disclosure of non-adherence (subsample)

Disclosure behavior	Lifestyle patients (%)	Cancer patients (%)
Proactively disclose	32.7	35.6
Disclose only if asked	24.5	28.9
Do not disclose	38.8	26.7

Use of adherence support tools

Tool	Lifestyle patients (%)	Cancer patients (%)
Pill case	25.0	32.0
Calendar	7.0	7.0
Family support	3.0	2.0
No tools used	64.0	53.0

Summary of Key Findings

The data highlight meaningful structural differences between lifestyle and oncology care contexts, particularly in practice setting, consultation time, and treatment complexity. Oncology physicians are overwhelmingly hospital-based (93.3% vs. 60.0% for lifestyle physicians), while lifestyle care is more evenly distributed across clinics

(40.0%) and hospitals. Consultation times are limited in both settings, but slightly longer in oncology: 53.3% of oncology visits last 5–10 minutes vs. 46.7% in lifestyle care, and 13.3% extend to 10–20 minutes vs. 6.7%. This difference is reflected in medication explanation time, where oncology physicians are more likely to spend ≥ 5 minutes (50.0% vs. 26.7%), whereas 56.7% of lifestyle physicians spend < 3 minutes explaining new prescriptions. Treatment burden also differs substantially: oncology physicians report higher medication complexity, with 30.0% prescribing ≥ 5 drugs vs. 6.7% in lifestyle care, while lifestyle patients more frequently take ≥ 3 medications (60.0% vs. 32.0%), indicating different patterns of chronic versus intensive treatment. Despite these contextual differences, adherence is consistently valued, although oncology physicians show more variance in perceived importance (e.g., 33.3% rating adherence at 6/10) compared to a more concentrated distribution among lifestyle physicians (peak at 7/10: 46.7%).

At the patient level, both groups report high perceived importance of adherence ($\geq 9/10$: 68.0% in both segments) and similarly high self-rated adherence ($\geq 9/10$: 77.0%), yet behavioral variation and communication gaps persist. Understanding of physician explanations is generally high but incomplete, with full understanding reported by 71.0% of lifestyle patients vs. 63.0% of cancer patients, while key barriers differ: cancer patients more frequently cite difficulty asking questions (35.1% vs. 10.3%), whereas lifestyle patients are more likely to believe gaps are not problematic (37.9%). Non-adherence behaviors are present in both groups, with $\geq 10\%$ dose omission reported by 11.0–14.0% for forgetting and 7.0–11.0% for intentional skipping, and adherence disclosure remains

partial, as only 32.7–35.6% proactively disclose non-adherence, while up to 38.8% do not disclose at all in lifestyle settings. Notably, support tool utilization is limited across both populations, with 64.0% of lifestyle patients and 53.0% of cancer patients reporting no tool use. Taken together, these findings suggest that while structural conditions and treatment intensity differ across care settings, a common pattern emerges high perceived adherence coexists with measurable behavioral gaps and incomplete transparency, driven by both interactional barriers and limited use of supportive systems.

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

In accordance with “SSBM Policy on the use of Generative AI” issued on 10th February 2025, AI-based tools were used in a limited and transparent manner during the preparation of this thesis. Specifically, such tools were employed to support learning and writing processes, including summarizing concepts, refining clarity, and structure of written text, and assisting with language editing (e.g., grammar checks and rephrasing of sentences). Generative AI was also used for brainstorming and organizing ideas to improve the coherence and readability of draft sections.

All substantive elements of the research, including the research design, data collection, the author conducted data analysis, interpretation of results, and formulation of conclusions independently. No AI tools were used to generate original graded content, fabricate data, create or falsify citations, or replace critical engagement with research material. The author retains full responsibility for the academic integrity, accuracy, and originality of this thesis.