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Quality Signals in Healthcare Services: An Integrative View from Physical Therapy Service Providers and Consumers in Bangkok, Thailand

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Abstract
Many highly competent healthcare service providers find it difficult to discreetly convey to consumers the level of quality of their services. Building on the signaling theory and prior literature on service quality, this paper explores how to appropriately signal quality. It integrates the perspectives of both healthcare service providers and consumers with regard to sending service quality signals. The five service quality dimensions at the core of this research include tangibility, reliability, responsiveness, empathy, and assurance. The study uses a mixed methodology. The qualitative approach involves interviews with clinic owners and consumers and the quantitative one a survey collected from 181 consumers. The results indicate that the top two signals are the reliability and physical therapist assurance dimensions. The primary focus of consumers is on the technical knowledge and skills of physical therapists and the extent to which they can be trusted and relied upon to improve their health and well-being. This study will help to bridge the communication gap between service providers and consumers.

Keywords: Quality Signal, Health Service, Physical Therapy, Consumer Perception, Service Quality Dimension

1. Introduction

The global healthcare industry has been on an upward trajectory (Morris, 2015; Srikarn, 2014). According to Allen (2019), global healthcare spending is expected to grow by 5.4 percent per year for the period 2017-2022 and exceed USD $10 trillion by 2022. But while the health service industry is experiencing growth, challenges are rising as well. One such challenge is the increasing difficulty some stakeholders in the healthcare industry have had signaling service quality (Dudley, Miller, Korenbrot, & Luft, 1998; Powell, Davies, & Thomson, 2003; Fesharaki, 2019). As a healthcare practitioner in Thailand, one of the coauthors of this article has experienced this challenge first hand as have colleagues working in that same clinic. While the quality of the services they provide is excellent, they find it difficult to communicate it to their current and potential consumers. At the same time, those in need of healthcare services often find it difficult to choose where to go and determine which clinic offers the best quality. Even those currently receiving a particular service have difficulty ascertaining the actual quality of the service. In short, service providers do not know how to signal quality and consumers are not certain about which signal to look for. This paper aims to discuss this issue in the context of physical therapy services in Bangkok, Thailand. To the best of the authors' knowledge, there is little research on quality signals that covers the physical therapy domain,

especially in the specific context of Thailand. Most of the existing research typically focuses on the technical aspects of treatment as illustrated by the two journals dedicated to physical therapy in Thailand. One is the *Thai Journal of Physical Therapy*, the official journal of the Physical Therapy Association of Thailand and the other, the *Journal of Medical Technology and Physical Therapy*, the official journal of the Faculty of Associated Medical Sciences at Khon Kaen University, Thailand. Both focus on the technical aspects of physical therapy. Additionally, when searching online such terms as 'physical therapy communication', 'signal', 'consumer signaling', or 'perceived quality', no relevant result can be found for Thailand. Yet, physical therapists, especially clinic owners, under pressure to develop competitive advantages, realize how important it is to be able to signal quality to consumers. This is all the more necessary in cases where consumers do not get well instantly as the failure to heal them right away may be taken as a sign of a lack of quality. Compounding these issues is the legal framework within which the physical therapy industry operates. How to promote in ads a physical therapy business in Thailand is governed by strict rules, regulations, and ethical guidelines. For example, physical therapists may not call themselves 'experts' (Office of the Council of State, 2004). They also are not permitted to use outright promotional messages (Ministry of Public Health, 2003).

Communication has to be subtle and restrained notwithstanding the fact that there is stiff competition in the Thai market. In Thailand, in 2014, the most recent year for which statistics are available, there were 281 physical therapy clinics (Ministry of Public Health, 2015a). This number is expected to have grown since. Another compelling reason for choosing this topic is the high growth of healthcare services in Thailand, which is considered to be one of the prominent medical tourism hubs in Asia (Kraiwong,Vongsirinavarat, & Soonthorndhada, 2014; Woraset, 2019). The physical therapy business has grown from 185 clinics in 2011 to 281 in 2014; a 51.89 percent increase. (Ministry of Public Health, 2015b), and Thailand has become the most popular destination for medical tourism (Destination Thailand, 2018). Chinese consumers, for example, report a positive experience with healthcare services in Thailand (Zhang, Wall, & Hughes, 2018). Additionally, since physical therapy is a healthcare service business characterized by information asymmetry between service providers and consumers, this makes it a suitable domain for our study.

In light of all the above, it is clear that there is a need to understand how to signal quality in the Thai physical therapy sector. This research study seeks to do just that by exploring the quality signal dimension from both a service provider and consumer perspective. More specifically, it first discusses the service elements of physical therapy, in particular those that are unique to physical therapy. It then examines how to signal each of them and considers whether service providers and consumers share similar or different views regarding these elements and signals. On the service provider side, this is achieved through interviews and surveys with physical therapists, physical therapy clinic owners, and administrative staff who also double as receptionists. To our best knowledge, this paper is the first one to provide an integrated view regarding quality signal between healthcare service providers and consumers. More specifically, this paper can benefit, those who work in the physical therapy business as they can apply the findings of this study to subtly, credibly, and sustainably signal quality to consumers.

2. Literature Review

- *Growth of the Healthcare Service Industry in Thailand*

A number of powerful forces support the continuous growth of the healthcare industry in Thailand, including physical therapy. One major push factor is the growing proportion of elder people in the composition of the Thai population (those aged 60 and over) (The United Nations,

2015). This is the inevitable consequence of the demographic transition from high to low fertility and the increase in longevity on the back of substantial progress in improving people's health and well-being and reducing mortality risks (Schultz, 2001). One direct consequence is the increasing burden on the healthcare system. This existential threat to the system is leading the government to encourage healthy conducts and support activities that promote elderly well-being (Thai Gerontology Research and Development institute, 2014). Moreover, research shows that working people also have health concern, but prefer natural treatment to medications, especially when it comes to injuries caused by inappropriate working position (Prasittivatechakoo, 2014). Another significant push factor accelerating the growth of the revenue of the rehabilitation sector is the Ministry of Public strategic plan to turn Thailand into the Medical Hub of Asia (2014-2018) (Ministry of Public Health, 2014).

- Asymmetric Information

Asymmetric information refers to a situation where a therapist has more information than a consumer or vice versa. According to Stiglitz (2000), asymmetric information can be divided into two subgroups. The first one relates to product or service quality, e.g. one of the parties is not fully informed about the other party's credentials. The second is the purpose or the behavioral intent of the other party (Connelly, Certo, Ireland, & Reutzel, 2011). Asymmetry of information is a market failure (Mushkin, 1958). In spite of the steady growth of the health market in the last decades and the internet boom, consumers still lack quality information (Haas-Wilson, 2001; Millenson, 2000; Topaz, Bar-Bachar, Admi, Denekamp, & Zimlichman, 2019; Rapport et al., 2019).

- Assessing Service Quality

The quality of healthcare services such as physical therapy tends to be difficult for consumers to assess due to its intangible and heterogeneous nature and the diversity of the needs to satisfy consumers (Payne, 1993). According to Parasuraman, Zeitham, and Berry (1985), consumers not only assess service quality from the results of the service provided but also from the service process. The result of the treatment may not always be successful. Uncertain recovery and unpredictable periods of rehabilitation cannot be discarded (Haas-Wilson, 2001). Consumers need accurate information about the quality of the health service before making a decision. However, medical information may be difficult for them to understand (Haas-Wilson, 2001). Service quality can be broken down into five dimensions: tangibility, reliability, responsiveness, assurance, and empathy (Berry, Zeithaml, & Parasuraman, 1985; Parasuraman et al., 1985; Zeithaml & Bitner, 1996). Each dimension will be discussed in more detail in the 'results' section.

- The Signaling Theory

In a nutshell, Haas-Wilson's (2001) signaling theory proposes that manufacturers and service providers can reduce risk for consumers and lower perceived risk in purchasing goods or services by sending them the right signals. At the core of the signaling theory is the desire to reduce the perceived risk inherent in purchasing a service. Service providers send signal to consumers to let them know about the 'invisible' properties of the services (Dean & Lang, 2008). They can send many different kinds of signal, such as, for example, clinic brand and specialization, to build confidence among consumers. Research on quality signal focuses on various forms of signals. These include warranty (Choi & Ishii, 2009), advertising (Oh & Veeraraghavan, 2009), word-of-mouth communication and third-party evaluation (Dean & Lang, 2008), and price (Henze, Schuett, & Sluijs, 2015). Signaling is very important for credence services such as healthcare services since consumers cannot access quality even though they have already used the service (Akerlof, 1970). As we just saw above, asymmetric information occurs when one party has more information than the other party, which allows the former to make better decisions than the latter (Connelly et al., 2011). Therefore, consumers

rely on these quality signals in making decision (Rao & Monroe, 1989). Another way of communicating quality is to position the organization as a specialist (Kalra & Li, 2008). Difficulty comprehending medical information is considered a major barrier due to consumer limitation in data acquisition and interpretation of such data. This is especially the case when having to decide on a healthcare service for a sudden injury as the patient/consumer has limited time to collect information. An immediate treatment generally produces more effective results (Hass-Wilson, 2001).

- Physical Therapy Clinic Selection and Consumer Signaling of Service Quality

A study conducted by Udomchalermpat in 2015 among consumers of physical therapy clinics in Bangkok found that most of them chose a particular clinic because it had specialized renowned physical therapists. This study also found that consumers who choose a physical therapy clinic because of the therapist's expertise tend to be more loyal than those who choose a physical therapy clinic because of its reasonable fees. Another determination of this study is that consumers who have heard about the physical therapy clinic from friends tend to have a higher loyalty level than those who find out about the clinic from online sources such as the clinic's website or social media such as Facebook.

3. Methodology

As explained earlier, this research study seeks to further explore how service providers signal quality and what quality signals consumers look for. Based on these objectives, a mixed approach (both qualitative and quantitative) was employed.

- Qualitative Approach

The qualitative approach consists of two main parts. First, eight consumers from Bangkok were interviewed. Since an interpretive method emphasizes the quality and richness of the data rather than the quantity, the number of participants should range from a single case to ten but not much more than that (Pietkiewicz & Smith, 2014). Six to eight participants are generally recommended as an appropriate number as this is still manageable for in-depth interviews. Limiting the number of interviewees to eight allowed the researchers to compare and contrast data across cases (Turpin et al., 1997). Second, three mini focus groups were formed among the eight service providers from Bangkok. One sub-group included four physical therapists, another two physical therapy owners and the third one two administrative staffs/receptionists. To ensure the reliability and validity of qualitative research, the participants selected must correspond to the research objectives (Appleton, 1995). Thus, the participants recruited were those with service experience in various job positions and the ability to answer a variety of questions on the core issues.

Appointments were set at a time and place convenient to all so as to create an environment conducive to efficient communication (Wattanasuwan, 2007). The interviewer in this research study is both a physical therapist and physical therapy clinic owner. At the start of the interviews/mini focus groups, the researcher first built a rapport with the participants in order to break the ice and make them feel at ease and comfortable sharing their feelings and opinions (Fontana & Frey, 1994). The research objectives were first explained to the participants (Spradley, 1979). Recording during the interviews was optional and left up to the participants (Wattanasuwan, 2007). The interviews/mini focus groups consisted of open-ended questions. Additional questions on each issue were asked (Riessman, 1993) and the interviewees were closely observed for further probing and analysis (Mayoux, 2000). The philosophy of qualitative methodology is that there is no single truth (Hartley & Muhit, 2003). As the saying goes, beauty is in the eyes of the beholder. The authors observed, interviewed, moderated, and interpreted the discussion and stories learned from the interviews and focus groups with this principle in mind and were open to different perspectives on the same issue.

Perhaps of even greater significance, all the key points mentioned by the participants in their interviews were verified for correctness (Mayoux, 2000). Qualitative and quantitative methodologies were both used to triangulate the data to ensure its reliability (Lincoln & Guba, 1985). To prevent the researchers from overlooking minor differences or ambiguous data, the qualitative data were interpreted based on their subjectivity (Wallendorf & Belk, 1989). As a physical therapist and physical therapy clinic owner, one of the researchers is "experience-near" (Geertz, 1973), i.e., very close to the information. The other, a university lecturer in marketing, has no health service background, and therefore is "experience–far" (Geertz, 1973). The researcher combination thus improved the accuracy of the interpretation (Geertz, 1973). Additionally, since the interviews were recorded and transcribed, further information could be obtained from available researchers to examine the validity and reliability the material collected (Lincoln & Guba, 1985).

- *Quantitative Approach*

Since the qualitative results were used as input for the quantitative part, obviously the quantitative research was conducted once the qualitative study was completed. The main impact of the qualitative part is the different dimensions which both healthcare service providers and consumers use to identify quality signals or to put it another way, how service providers try to signal quality and what consumers look at in order to assess quality. For example, one service quality dimension could be 'credibility' and the number of consumers at the clinic may therefore be a signal of this dimension. A survey was conducted to study the importance consumers give to each service quality dimension and quality signal. The target population was people living in Bangkok who had received services at a physical therapy clinic (musculoskeletal system) at least once in the past year. Survey results were collected from 181 respondents. The questionnaire used for collecting data consists of three parts. In Part 1, information about the general behavior in receiving physical therapy services was collected. Part 2 contains questions about quality signals as well as their importance. To assess the level of importance, a 5-point Likert scale was used. Part 3 gathers demographic information on the research participants. All the data on the quality and quality signals of each dimension of consumers at physical therapy clinics (musculoskeletal system) in Bangkok were analyzed using descriptive statistics.

4. Results and Discussion

The Qualitative data was gathered from service providers and consumers. The participants were between 21-40 years old. Five of the eight consumers in the one-on-one in-depth interviews were females. Six of them hold a master's degree or a higher degree and two have a bachelor degree. As noted earlier, the qualitative signals generated from the interviews were used to develop questionnaire items for the quantitative research.

For the quantitative part, 181 physical therapy consumers completed the questionnaire. Their age ranges from 41 to 60 years old and the average age is 44 years old. 55 percent of them are females and 82 percent of them have a bachelor degree or higher. The level of education of the remaining 18 percent is below bachelor's degree level. The findings from both the qualitative and quantitative research are in line with prior literature on the service quality dimensions used for this study (tangibility, reliability, responsiveness, assurance and empathy) (Meesala & Paul, 2018; Parasuraman et al., 1985; Setyawan et al., 2019). More importantly, the results indicate a set of quality signals in relation to each quality dimension and a ranking was obtained from the quantitative part for each quality signals.

The qualitative sessions, both with service providers and consumers, generated 46 signals. The highest number of signals relates to 'tangibility', i.e., physical evidence that can be easily observed. The top-three highest-rated tangibility signals are (i) specialized physical therapy

equipment (mean 4.60; standard deviation 0.57); (ii) contemporary equipment (mean 4.55; standard deviation 0.59); and (iii) clean place and equipment (mean 4.55; standard deviation 0.64). Interestingly, the top tangibility signal (specialized physical therapy equipment) was not at all mentioned by service providers during the qualitative sessions. The second-highest rated signal (contemporary equipment), however, was mentioned by both physical therapists and clinic owners. Although consumers did not mention them in the qualitative sessions, they rated them quite highly once they were asked about them in those sessions.

The quality dimension with the second highest number of signals is 'assurance', which can be grouped into two groups: assurance regarding physical therapists, and assurance regarding clinics. The top three signals for therapist assurance are: (i) ability to explain the symptoms and causes of disease and formulate a guideline for treatment (mean 4.69; standard deviation 0.51); (ii) ability to answer questions confidently (mean 4.66; standard deviation 0.52); and (iii) ability to recommend and teach self-care to consumers (mean 4.65; standard deviation 0.58). The top signal is essential as it was mentioned by almost all service providers and consumers. This input is in line with the quantitative rating as well. As to the top-three signals for clinic assurance, they include: (i) displaying a physical therapy license (mean 4.44; standard deviation 0.65); (ii) displaying clinic registration (mean 4.32; standard deviation 0.71); and (iii) displaying physical therapists' training certificates (mean 4.22; standard deviation 0.87).

The 'empathy' service quality dimension generated the third highest number of signals. The top three signals are: (i) physical therapist's ability to memorize consumers' symptoms (mean 4.61; standard deviation 0.52); (iii) physical therapists' following up on consumers' symptoms (mean 4.61; standard deviation 0.53); and (iii) physical therapists taking time to give advice or discuss with the consumers (mean 4.60; standard deviation 0.56). Surprisingly, service providers did not mention the first signal (memorizing consumers' symptoms) at all during the interviews and only one out of the eight consumers mentioned this in the qualitative sessions. Yet, it tops the list for the empathy dimension in the survey. This shows that some signals so far neglected by practitioners could be very critical to indicate quality. The other top-rating score in 'empathy' is 'physical therapists following through on consumers' symptoms. Again, only clinic owners though mentioned this (not even one therapist did). Half of the eight consumers made reference to it. In the meantime, this signal is one of the top-rated signals for the empathy dimension in the survey. This points out to the fact that information and exchanges of perspective among service providers (clinic owners, therapists, and administrative staff/ receptionists) can be very useful and should be encouraged.

Next, the top-three rated 'reliability' signals are: (i) physical therapist's ability to diagnose correctly (mean 4.79; standard deviation 0.43); (ii) good treatment results (mean 4.77; standard deviation 0.49); and (iii) the consumer got better within a short period (mean 4.47; standard deviation 0.72). None of the service providers mentioned any of the top three signals but almost all consumers did. This shows the importance for service providers to learn and embrace the consumer perspective. If quality signals were generated only by service providers, this signal would not have been in the list for the quantitative rating, which means that in this case, service providers could have overlooked this top reliability dimension. It should be noted, though, that this top reliability signal could not be properly assessed if consumers did not have the knowledge, skills and experience which such an assessment requires. This dimension should be related to the therapist assurance discussed earlier as consumers look at therapists' ability to diagnose any medical problem in their domain of expertise correctly as both a signal of reliability and therapist assurance.

Finally, the top-three rating quality signals for 'responsiveness' are/ (i) appropriate waiting time before receiving treatment (mean 4.35; standard deviation 0.62); (ii) receptionist is enthusiastic and willing to help (mean 4.29; standard deviation 0.68); and (iii) receptionist's ability to tell how long the consumer will have to wait (mean 4.15; standard deviation 0.71). These three signals are mainly about the appropriate waiting time and receptionists' interaction with consumers and ability to provide adequate and reliable information.

When ranking all signals regardless of the dimension, the top five signals are: (i) physical therapist's ability to diagnose correctly (mean 4.79; standard deviation 0.43); (ii) good treatment results (mean 4.77; standard deviation 0.49); (iii) physical therapists' ability to explain the symptoms and causes of a disease and come up with a guideline for treatment (mean 4.69; standard deviation 0.51); (iv) physical therapists' ability to answer questions with confidence (mean 4.66; standard deviation 0.52); and (v) physical therapists' recommendations and self-care teaching to consumers (mean 4.65; standard deviation 0.58). The top two signals are reliability dimensions and the other three signals are associated with a physical therapist assurance dimension. In other words, these top-five signals focus on the technical knowledge and skills of physical therapists, including their communication skills and ability to involve consumers in their own self-care. Clearly, consumers are primarily concerned about physical therapists' training, expertise, and communication skills and to what extent they can be trusted and relied upon to improve their health and well-being. These are legitimate concerns.

Another important finding from this research is that it is necessary to learn from both a health service provider and consumer perspective. Some important signals were completely neglected by service providers at the beginning of the process, yet they received a very high rating when brought to their attention at the quantitative stage. For example, the item 'sizable clinic' could easily override another item such as 'need to display the clinic license' since clinic owners often assume that having a large operation automatically implies that it is licensed. But consumers see it otherwise and if a license is not displayed, they are likely to interpret it as meaning that no license was delivered. Another example is 'capability and skills of the physical therapist' which could obliterate the need to mention the lack of experience 'short years of service'. It is thus critical for clinic owners to make use of all the different quality signals and manage them so as to maximize the quality perception. One of the most essential quality signals is physical therapist knowledge development so that they will be able to diagnose medical problems correctly. This will help build consumer confidence.

In this case, if the therapist happened to have little experience, they should make it clear that he/she has a mentor that closely supervises his/her work, especially when giving diagnosis. This could go a long way in terms of alleviating consumers' concerns, which as we just saw, center around reliability and assurance. This is a big part of marketing communication. While consumers can generally easily perceive the quality of physical therapy equipment, especially if it is state-of-the-art, physical therapy information and treatment plans are more sensitive issues to deal with. These are part of the quality signals to help consumers assess the service quality. In addition, clinic owners should choose proper communication channels such as word-of-mouth from friends, family, medical staff and social media (as well as e-word-of-mouth) as these are vital channel nowadays. They should also consider providing content – well-being and physical therapy knowledge – as well as information that serves as quality signals, both via online and offline channels (e.g. brochures). Finally, there should be an adequate proportion of consumers assigned per physical therapist at any given time. This would avoid the overlapping of treatment time, and enhance the quality of individual care. Treating too many consumers at a time will reduce perceived quality.

5. Conclusion and Recommendations for Future Studies

This research built on the signaling theory and adopted the service quality dimension frame from prior literature to explore the quality signals for each quality dimension. The focus was on the relative importance of each quality signals from the perspective of both service providers and consumers. Since health service providers – physical therapists, physical therapy clinic owners, and administrative staff/ receptionists – were the primary audience of this research, it is the authors' hope that the findings will help them be aware of and progressively be able to appropriately convey the quality signals of the five service quality dimensions at the core of this study. This will help to bridge the communication gap between service providers and consumers and improve the latter's well-being. The results regarding the five quality dimensions can be summarized as follows:

- *Tangibility:* The perspectives of service providers and consumers regarding specialized physical therapy equipment differ. Whereas consumers gave a very high rating to this signal in the quantitative research, service providers did not mention this signal during the qualitative sessions. This might be because physical therapy equipment is controlled by the Notification of the Ministry of Public Health No11 (2003), which specifies the list of equipment that can be used for physical therapy. To register as a clinic, physical therapy clinic must have basic physical therapy equipment according to this regulation. Thus, service providers did not mention this aspect because they all comply with the regulation. Another difference is about advanced equipment. It was found that consumers did not mention this in the qualitative research. However, it was surprisingly prioritized in second place in the quantitative rating. Consumers do not have 'advanced equipment' as their top-of-mind signal. However, if they are reminded of this aspect, they will attach a lot of importance to it. Therefore, it is recommended that a clinic communicate about their advanced equipment to consumers, so that consumers would have a higher quality perception towards the clinic.

- *Reliability:* The reliability dimension mainly concerns the capability and skills of physical therapists, essentially their ability to diagnose correctly and produce good results. These are the top two signals mostly emphasized by consumers. This is because recovery is the main purpose for visiting physical therapy clinics. When consumers experience good results, this quality signal override other negative signals, such as few-year experience among young physical therapists. Experiencing good results also gives consumers confidence to persuade other potential consumers to come to the clinic. Apart from having reliable physical therapists, consumers also expect reliable receptionists who are able to manage consumers' medical records correctly. Additionally, receptionists are expected to be present at all time. Consumers did not mention these two points in the qualitative research. However, they rated this point highly when reminded in the quantitative part. This signal might appear to be trivial, yet it affects the quality perception of the clinic.

- *Responsiveness:* The most important quality signal in the responsiveness dimension is the appropriate waiting time. This is an important factor that frequently makes the physical therapy consumers switch from public hospital to private clinic due to shorter waiting time. The appropriate waiting time is subjective. Each consumer has his/her own acceptable waiting time. Generally, consumers are willing to wait longer when they do not set an appointment in advance. However, they need to know how long it would be, so that they can ensure that they will receive treatment on that day. The other responsiveness signal is enthusiastic receptionists. Physical therapy clinic owners should pay attention to this point since helpful and friendly receptionists (or conversely, unenthusiastic ones) create the first impression and could (or could not) reduce any dissatisfaction with the service.

- *Assurance in the Service Quality of Physical Therapists:* The top five quality signals which consumers emphasize are the capability and skills of the physical therapists. This essentially refers to their ability to explain symptoms and their causes and provide recommendations for treatment. They are also expected to answer questions with confidence, recommend self-care tips, explain how to use therapy equipment and explain the expected results from the physical therapy equipment and treatment. Besides, physical therapists should be able to diagnose a medical problem after interviewing and examining consumers thoroughly. Other signals include service year and education. For example, consumers prefer those with at least two years of experience and those who graduated from leading medical institutes. These quality signals can be found prior to the treatment. If consumers have positive experience during the diagnosis and treatment, the positive effect will negate the negative signals regarding short service years and institute's fame.

- *Assurance in the Service Quality of Physical Therapy Clinics:* Interestingly, consumers view the display of the professional license of physical therapists as the top quality signal in terms of assurance regarding the clinic. This is followed by the display of clinic registration certificates. In contrast, service providers do not put much emphasis on these quality signals. They display the license and clinic registration certificate simply to comply with regulations. On the other end of the spectrum, displaying the training certificates of physical therapists is the quality signal on which consumers put most emphasis. It assures consumers that the clinic has knowledgeable personnel to help them, especially in the case of serious injuries or rare diseases. It gives consumers peace of mind to know that they can seek help from therapists who are qualified.

- *Empathy:* Service providers and consumers view the empathy dimension differently. Service providers emphasize the aspect of empathy that concerns their duties. Meanwhile, each consumer has different needs regarding this dimension. When discussing the empathy dimension during the qualitative sessions, service providers did not mention individual care for each consumer. However, consumers rated individual care highly when completing the survey. This suggests that if a physical therapist has to attend to too many consumers at the same time, this will potentially reduce the quality perception. Finally, policy makers could use the findings from this study to raise awareness about the quality signals that have the most impact on consumer perception in addition to the actual service. They could also use them to promote health tourism.

- *Recommendations for Future Studies*

First, since this is a cross-sectional study, it is recommended that further longitudinal studies be conducted to determine whether there is any change in the quality signal perception in the course of the treatment. Second, this research only covers the musculoskeletal system. Future studies on quality signals in other health service domains would help generalize the results of this study. Third, to the authors' knowledge, this research is one of the few attempts to study the integrated perspectives of health service providers and consumers. The research design and objective are exploratory in nature. Future studies in this area should confirm and extend the knowledge frontier.

References

Akerlof, G. A. (1970). The Market for 'lem-ons': Qualitative uncertainty and the market mechanism. *Quarterly Journal Economics, 84(*3), 488-500.

Allen, S. (2019). Global Health Care Outlook: Shaping the Future. 2019. Retrieved August 10, 2019, from: https://www2.deloitte.com/global/en/pages/life-sciences-and-healthcare/articles/global-health-care-sector-outlook.html#report

Appleton, J. V. (1995). Analyzing qualitative interview data: Addressing issues of validity and reliability. *Journal of Advanced Nursing, 22*(5), 993-997.

Berry, L. L., Zeithaml, V. A., & Parasuraman, A. (1985). Quality counts in services, too. *Business Horizons, 28*(3), 44-52.

Choi, B., & Ishii, J. (2009). Consumer Perception of Warranty as Signal of Quality: An Empirical Study of Powertrain Warranties. Retrieved June 15, 2019, from: http://economics.yale.edu/sites/default/files/files/Workshops-Seminars/Industrial-Organization/ishii-091001.pdf

Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management, 37*(1), 39-67.

Dean, D. H., & Lang, J. M. (2008). Comparing three signals of service quality. *Journal of Services Marketing*, *22*(1), 48-58.

Destination Thailand (2018). Medical Devices ASEAN 2018 Drives Thailand's Ambition to Become the Medical Hub of Asia. Retrieved June 15, 2019, from: http://destinationthailandnews.com/news/headline-news/medical-devices-asean-2018-drives-thailands-ambition-to-become-the-medical-hub-of-asia.html

Dudley, R. A., Miller, R. H., Korenbrot, T. Y., & Luft, H. S. (1998). The impact of financial incentives on quality of health care. *The Milbank Quarterly*, *76*(4), 649-686.

Fesharaki, F. (2019). Nonverbal communication of pharmacists during counseling leading to patient satisfaction: Evidence from Iranian retail market. *Atlantic Journal of Communication*, *27*(1), 62-73.

Fontana, A., & Frey, J. H. (1994). Interviewing: The art of science. In N. Denzin & Y. Lincoln (Eds.), *Handbook of Qualitative Research* (p. 361-376). London: SAGE Publications.

Geertz, C. (1973). *The interpretation of cultures*. New York: Basic Books.

Haas-Wilson, D. (2001). Arrow and the information market failure in health care: The changing content and sources of health care information. *Health Affairs*, *26*(6), 1545-1547.

Hartley, S., & Muhit, M. (2003). Using qualitative research methods for disability research in majority world countries. *Asia Pacific Disability Rehabilitation Journal*, *14*(2), 103-114.

Henze, B., Schuett, F., & Sluijs, J. P. (2015). Transparency in markets for experience goods: Experimental evidence. *Economic Inquiry*, *53*(1), 640-659.

Kalra, A., & Li, S. (2008). Signaling quality through specialization. *Marketing Science*, *27*(2), 168-184.

Kraiwong, R., Vongsirinavarat, M., & Soonthorndhada, K. (2014). Physical therapy workforce shortage for aging and aged societies in Thailand. *Journal of the Medical Association of Thailand, 97*(Suppl. 7), S101-S106.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* CA: SAGE Publications.

Mayoux, L. (2000). Qualitative Methods. Retrieved June 15, 2019, from: http://www.proveandimprove.org/documents/QualMethods.pdf

Meesala, A., & Paul, J. (2018). Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future. *Journal of Retailing and Consumer Services, 40*(C), 261-269.

Millenson, M. L. (2000). Opinion: Medicine's next big opportunity. *Public Health, 114*(6), 496.

Ministry of Public Health (2003). Ministry of Public Health Notification No.11 B.E. 2546 (2003). Retrieved June 15, 2019, from: http://law.longdo.com/law/620/sub43617

Ministry of Public Health (2014). Government Performance Report. Retrieved June 19, 2019, from: http://pmsn.hss.moph.go.th/uploadFiles/document/D00000001327_25781.pdf.

Ministry of Public Health (2015a). Hospitals Statistic 2015. Retrieved May 7, 2019, from: http://mrd.hss.moph.go.th/display_document.jsp?id=D00000001605.

Ministry of Public Health (2015b). Private Clinic Statistic 2015. Retrieved May 7, 2019 from: http://mrd.hss.moph.go.th/uploadFiles/document/D00000001603_26713.pdf.

Morris, M. (2015). Global Health Care Outlook: Common Goals, Competing Priorities. Retrieved June 15, 2019, from: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Life-Sciences-Health-Care/gx-lshc-2015-health-care-outlook-global.pdf

Mushkin, S. J. (1958). Toward a definition of health economics. *Public Health Reports*, *73*(9), 785-793.

Office of the Council of State (2004). Physiotherapy Professional Act, B.E. 2547. Retrieved September 26, 2015, from: http://web.krisdika.go.th/data/law/law2/%C766/%C766-20-2547-a0001.htm

Oh, J., & Veeraraghavan, S. (2009). Signaling Service Quality Through Advertising. Retrieved June 15, 2019, from: http://msom.technion.ac.il/conf_program/papers/TD/5/149.pdf

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). SERVQUAL: A conceptual model of service quality and its implication. *Journal of Marketing*, *49*(1), 41-50.

Payne, A. (1993). *The essence of services marketing*. UK: Prentice Hall.

Pietkiewicz, I., & Smith, J. A. (2014). A practical guide to using interpretative phenomenological analysis in qualitative research psychology. *Psychological journal*, *20*(1), 7-14.

Powell, A. E., Davies, H. T. O., & Thomson, R. G. (2003). Using routine comparative data to assess the quality of health care: Understanding and avoiding common pitfalls. *BMJ Quality & Safety*, *12*(2), 122-128.

Prasittivatechakoo, A. (2014). Alternative health and perspective to select without overlook. *Journal of The Royal Thai Army Nurses*, *15*(3), 38-43.

Rao, A. R., & Monroe, K. B. (1989). The effect of price, brand name, and store name on buyers' perceptions of product quality: An integrative review. *Journal of Marketing Research*, *26*(3), 351-357.

Rapport, F., Hibbert, P., Baysari, M., Long, J. C., Seah, R., Zheng, W. Y., ... & Braithwaite, J. (2019). What do patients really want? An in-depth examination of patient experience in four Australian hospitals. *BMC Health Services Research*, *19*(1), 1-9.

Riessman, C. K. (1993). *Narrative analysis*. London: SAGE Publication.

Schultz, P. (2001) The fertility transition: Economic explanations, *Economic Growth Center Yale University*, Discussion Paper no. 833.

Setyawan, F. E. B., Supriyanto, S., Tunjungsari, F., Hanifaty, W. O. N., & Lestari, R. (2019). The influence of medical staff services quality on patient satisfaction based on SERVQUAL dimensions. *International Journal of Public Health*, *8*(1), 52-58.

Spradley, J. P. (1979). *The ethnographic interview*. New York: Holt, Rineehanrt & Winston.

Srikarn, P. (2014). Health and Social Services. Retrieved September 26, from: http://www.thaifta.com/thaifta/portals/0/SecProfile_healthoct57.pdf.

Stiglitz, J. E. (2000). The contributions of the economics of information to twentieth century economics. *The Quarterly Journal of Economics*, *115*(4), 1441-1478.

Thai Gerontology Research and Development institute. (2014). *Situation of the Thai elderly*. Bangkok: Amarin Printing & Publishing Public Company Limited.

The United Nations, Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. *World Population Aging 2017*. New York, NY: *United Nations*, 2015, p. 1. Retrieved February 14, 2018, from: http://esa.un.org/unpd/wpp/Excel-Data/population

Topaz, M., Bar-Bachar, O., Admi, H., Denekamp, Y., & Zimlichman, E. (2019). Patient-centered care via health information technology: A qualitative study with experts from Israel and the US. *Informatics for Health and Social Care*, *45*(3), 217-228.

Turpin, G., Barley, V., Beail, N., Scaife, J., Slade, P., Smith, J.A., & Walsh, S. (1997). Standards for research projects and theses involving qualitative methods: Suggested guidelines for trainees and courses. *Clinical Psychology Forum*, *108*, 3-7.

Udomchalermpat, N. (2015). Service Quality Influencing Customer Loyalty Toward Physical Therapy Clinics in Bangkok. Master of Business Administration Independent Study, Rangsit University.

Wallendorf, M., & Belk, R. W. (1989). Assessing trustworthiness in naturalistic consumer research. In E. C. Hirschman (Ed.), *Interpretive Consumer Research* (p. 69-84). UT: Association for Consumer Research.

Wattanasuwan, K. (2007). Narrative: An Alternative Way to Gain Consumer Insights, Presented at the Oxford Business & Economic Conference, Oxford University, UK, 2007.

Woraset, K. (2019). *The Liberalization of Thailand Medical Services Industry*. Doctoral Dissertation, Seoul National University.

Zeithaml, V. A., & Bitner, M. J. (1996). *Service marketing* (1st Ed.). New York: Mcgraw-Hill.

Zhang, X., Wall, W. P., & Hughes, K. (2018). Exploring the perceived success of a strategic medical tourism alliance from the consumers' perspective. *International Journal of Applied Business & International Management*, *3*(1), 75-81.

Table 1: Summary of top three quality signals for five service quality dimensions

Signals	Mean	Standard Deviation	Tangibility	Assurance	Empathy	Reliability	Responsive-ness
Physical therapist's ability to diagnose correctly	4.79	0.43				✓	
Good treatment result	4.77	0.49				✓	
Physical therapist's ability to explain symptoms, causes, course of disease, and guideline for treatment	4.69	0.51		✓			
Physical therapist's ability to answer questions confidently	4.66	0.52		✓			
Physical therapist's ability to recommend and teach self-care to consumers	4.65	0.58		✓			
Physical therapist's ability to memorize consumer's symptom	4.61	0.52			✓		
Physical therapist's following up consumer's symptom	4.61	0.53			✓		
Physical therapist's taking time to give advice or discuss with the consumers	4.60	0.56			✓		
Specialized physical therapy equipment	4.60	0.57	✓				
Contemporary equipment	4.55	0.59	✓				
Clean place and equipment	4.55	0.64	✓				
Consumer gets better in a short period	4.47	0.72				✓	
Appropriate waiting time before receiving the treatment	4.35	0.62					✓
Receptionist being enthusiastic and is willing to help	4.29	0.68					✓
Receptionist's ability to answer the question of how long the consumer has to wait	4.15	0.71					✓