

IMPROVING PATIENT COMPLIANCE TO ACHIEVE SATISFACTION: The Case of Low Back Pain Physiotherapy Practices in Kuwait

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Abstract - Globally, over the last decades, there has been an increase in investigating the views of patients on healthcare services. However, in developing countries patients perceptions toward healthcare have seemed to be largely ignored. This ignorance may lead patients to lose faith in public and private hospitals and to look for healthcare services in other countries (Andaleebet *et al.* 2007). Physiotherapy service is one of the most important healthcare services that are concerned about maximizing the quality of life of patients by improving their physical abilities. However, achieving satisfaction in physiotherapy is harder than any other healthcare service because the success and effectiveness of physiotherapy programs depends mainly on patient compliance to treatment recommendations.

The aim of this study was investigate the determinants of patient compliance and satisfaction in physiotherapy for Low Back Pain (LBP), the most prevailing musculoskeletal disorder worldwide. This study employed quantitative research where 59-item survey questionnaire was distributed in three public and three private physiotherapy departments in Kuwait for LPB patients after receiving the final session of their scheduled physiotherapy session. A sample size of 342 patients was obtained and analyzed.

According to the findings of the study, the Discriminant analysis revealed that patient satisfaction in physiotherapy departments in Kuwait is mainly influenced by goal attainment. However, Structural Equation Modeling (SEM) has also shown direct influence of perceived service quality (in all its dimensions) and motivation on satisfaction. It was also found that determinants of satisfaction differ between public and private hospitals. In the public hospitals the main determinant of satisfaction is the goal attainment while in the private hospitals the main determinant of satisfaction comes from the physical environment quality. The local physiotherapy departments are recommended to reconsider the importance of having better communication skills and motivation programs with patients in order to increase their compliance which consequently influences their goal attainment in overcoming pain and preventing their back condition to worsen and increasing the quality of their lives.

Key Words: Patient satisfaction, patient compliance, perceived service quality, physiotherapist participation, patient participation, goal attainment, low back pain, physiotherapy, Kuwait

1. INTRODUCTION

Low Back Pain (LBP) is one of the most prevailing musculoskeletal disorders worldwide. Freburger *et al.* (2009) pointed out that 80% of the population globally, had experienced or will experience LBP at some point of their lifetimes. Among all healthcare providers, physiotherapists play important roles in managing LBP through decreasing pain and reducing the suffering of patients (Ramond *et al.* 2011). Nevertheless, the success and effectiveness of physiotherapy is mainly related to patient adherence and compliance to physiotherapist's recommendations and advice (Middleton 2004). In physiotherapy, patients expect to benefit from the treatment therapy by improving the quality of their lives. Patient satisfaction which is an indicator of the success of any healthcare organization may be harder to achieve and maintain in physiotherapy. This is mainly due to having longer sessions than other routine medical visits as well as requiring patient's active participation and patient acceptance in the treatment process (Monnin and Perneger 2002).

Over the last decades, there has been an increase in investigating the views of patients on healthcare services. However, in developing countries patients perceptions toward healthcare have seemed to be largely ignored. This ignorance may lead patients to lose faith in public and private hospitals and to look for healthcare services in other countries (Andaleeb *et al.* 2007).

This study contributes to the literature on patient satisfaction in physiotherapy in particular with paying attention to patient compliance as a gateway to satisfaction. The research has focused more on physiotherapy for the management of Low Back Pain conditions. We studied satisfaction from both the process of care and the treatment outcome dimensions. The process of care is manifested through the physiotherapist's provision of information and supporting the patient, patient participation and the perception of service quality. The treatment outcome is about attaining the goal from the physical therapy treatment.

The above brief review leads us to formulate the following research questions: first, what are the main determinants of patient satisfaction in physiotherapy for Low Back Pain (LBP) sufferers in Kuwait when examining private and public hospitals? Second, what are the most important factors that affect patient compliance in physiotherapy

departments in Kuwait for LBP sufferers? Third, what is the influence of the physiotherapist in the service encounter? Fourth, how can patients' participation be influenced and how is it related to satisfaction in physiotherapy practice in Kuwait? Fifth, what can influence the perception of service quality in physiotherapy departments in Kuwait? Sixth, what is the effect of demographics and the type of the hospital on patient compliance and participation in Kuwait for LBP sufferers? Seventh, what do physiotherapy departments need to be perceived as best physiotherapy practices in Kuwait through the eyes of patients? Finally, what do physiotherapy departments need to be perceived as best physiotherapy practices in Kuwait through the eyes of patients?

This study employed quantitative research where 59-item survey questionnaire was distributed in three public and three private physiotherapy departments in Kuwait for LBP patients after receiving the final session of their scheduled physiotherapy session. A sample size of 342 patients was obtained and analyzed.

2. LITERATURE REVIEW

2.1 Low Back Pain

Low Back Pain (LBP) is one of the most prevailing musculoskeletal problems worldwide; it affects more than 80% of the population at some point in their lives (Woolf 2003). In fact, Low Back Pain happens to be the second leading symptomatic reason expressed by patients when visiting physicians (Cypress 1983; Cited by Hulen 2008). Although, non-specific Low Back Pain is a common medical problem in primary care centres and hospitals in Kuwait, there has been no published data concerning its prevalence in the country (Shehab and Aljarrallah 2002 ; Al-Awadhi *et al.* 2004).

The vast majority of Low Back Pain problems do not warrant surgical procedures as approximately 90% of the referrals made to physiotherapists are appropriate for conservative management through physiotherapy programs (Ferguson *et al.* 2010). In order to prevent acute symptoms to become chronic, interventions should take place in the first phase of the condition (Ferguson *et al.* 2010). Critchley *et al.* (2007) demonstrated that different physiotherapy programmes and regimens are effective in reducing disability and pain in moderately disabled Low Back Pain patients. It was also found that even simple exercises that do not require special equipment in combination with back education to patients by their physiotherapist are effective tools in improving self-management (Critchley *et al.* 2007).

2.2 Patient Satisfaction

Delivering high quality service and providing appropriate healthcare is a must to gain competitive advantage and to provide healthier lives to people (Quader 2009). This is

especially important because the healthcare industry is growing fast as a result of the introduction of new technologies and treatments and constantly increasing patient expectations (Andaleeb 1998; Cited by Curry and Sinclair 2002). There are various definitions and interpretations for patient satisfaction. Kim *et al.* (2008) came up with a comprehensive definition and defined patient satisfaction as "the assessment of the patient about the perceived value and continued response toward a specific medical service in relation to the expected value before, during and after the consumption of that medical service".

Patient satisfaction was found to be multi-dimensional that is influenced by many factors and cannot be seen from one perspective (May 2001). In the healthcare industry, patient satisfaction can be affected by many factors. The determinants of satisfaction can vary depending on the type of the hospital/clinic being evaluated. It is noticed that service quality happens to be one of the most important dimensions of patient satisfaction.

In physiotherapy, the determinants of patient satisfaction can vary according to the type of physiotherapy department being tested and different individual patient conditions. Roush and Sonstroem (1999) found that patient satisfaction in physiotherapy outpatient clinics is widely influenced by non-clinical issues like locations and costs. However Beattie *et al.* (2002) have a contradicting opinion as they discovered that patients are more concerned with clinical issues (i.e. the treatment outcome) in addition to their interaction with the therapist.

2.3 Service Quality

Service Quality (SQ) has always appeared to be crucial in determining patient satisfaction. SQs based on multiple dimensions (Parasuraman *et al.* 1985; Gronroos 1990). However, Brady and Cronin (2001) noted that there is no general agreement to the nature and content of these dimensions. Generally, in the service environment, Zeithaml *et al.* (2009) argued that consumer's judge the quality of services according to their perception of technical quality, interaction quality and physical environment quality.

In this study we sought to use the three dimensions of quality namely technical quality, functional quality and interaction quality. Carman (1990) noticed that consumers tend to break service quality dimensions into sub dimensions when judging services. Therefore, we sought explaining the three dimensions of service quality in alignment with their sub-dimensions that were originally proposed by Parasuraman *et al.* (1988). Curry & Sinclair (2002) used the same sub-dimensions when examining the service quality of outpatient physiotherapy. Each of the dimensions and sub-dimensions are explained below.

Technical quality of healthcare services is defined as “the accuracy of medical diagnoses and procedures or the compliance of professional specifications” (Lam 1997; Cited by Rashid and Jusoff 2008).

In other words, physicians have to be competent and precise in their evaluations of symptoms so they can provide the proper treatment. Having said that, the medical care services are high in credence quality where patients lack the experience to be in a position to judge these services (Zeithaml *et al.* 2009). Kang and James (2004) states that technical competence and immediate treatment results may be difficult for patients to evaluate because patients lack the experience or the ability to assess technical qualities. Instead, patients usually rely on other attributes to assess technical quality which is the reliability of the service provider.

The interaction quality is about the interpersonal interactions during the service encounters are considered to have important effect on service quality perception (Bowen and Schneider 1985). This quality is highly dependent on harmonious personal interactions between patients and care providers. Parasuraman *et al.* (1988) represent the quality of interaction through three sub-dimensions of instrument and these are responsiveness, assurance and empathy. The same sub-dimensions were represented by Bitner *et al.* (1990).

The physical environment quality is basically about the appearance of the department in which the service is provided, the locality of the service building and the use of material equipments. It is increasingly recognized that improved healthcare facility can result in improved patient and staff outcomes (Nelson *et al.* 2005). The physical environment quality is represented by **tangibles** in Parasuraman *et al.* (1988) instrument.

2.4 Healthcare Services Production

The medical service encounter entails joint-production where both doctor participation and patient participation are required for the service creation and delivery (Johnson *et al.* 2009). Now, the global healthcare system is being challenged by a new era which requires focusing more on the doctor-patient interaction and relationship (Enehaug 2000; Dewing *et al.* 2006).

The shift involves enabling patients to participate actively in the medical service encounter through requesting explanations, asking questions and having an important role in the decision making process (Street and Millay 2001; Katz *et al.* 2007), although some argue that the patient is not always capable of participating as he/she lacks the required knowledge to do so.

In physiotherapy, the role of the service provider is extremely crucial. Watson (2004) explained the importance of having apparent understanding between the physiotherapist and the patient before starting the

physical therapy process. Dean (2005) confirmed that physiotherapists can actually modify patients' expectations of fast cures and increase patients' own back care by spending time listening to patients, exploring their beliefs and identifying their fears.

Sweeny (2007) has examined how patient empowerment during patient-physician consultations raises patients trust and commitment toward their physician, her work was based on extending the conceptualization of Ouschan *et al.* (2000, 2006) that explored three dimensions of patient empowerment in medical consultations and these are: patient control in managing the illness, patient participation during the patient-physician interaction, and patient education and support received from the physician through consultation time.

2.4.1 The Extent of the Service Provider Participation (Physiotherapist Participation)

Sweeny (2007) explained that the service provider's participation in the service co-production and co-creation of value in healthcare has two main dimensions: Provision of information and Service Provider Support. Provision of information is about providing the patient with important information about his/her illness in addition to outcomes of compliance and consequences of non-compliance (Johnson *et al.* 2009). While Service Provider Support is about the way in which the provider communicate with the patient to encourage him/her participate in the medical encounter in addition to reinforcing instructions and answering questions to develop the needed motivation for further compliance (Sweeny 2007).

2.4.2 The Extent of Patient Participation in Service Production

Katz *et al.* (2007) acknowledge that patient participation in the medical service goes beyond the involvement in decision making as consumers may provide **mental**, physical and emotional inputs in the production process (Silpakit and Fisk 1985; Cited by Yen *et al.* 2004).

Harrington *et al.* (2004) indicated that patient participation lowers patient's anxiety and enhances satisfaction. Moreover, participation is positively associated with better adherence to the treatment regime (Rost *et al.* 1991; Cited by Katz *et al.* 2007). According to Sweeny (2007), consumer participation in health services is measured through measuring “patient input” which is about discussing alternative care and information with the Doctor/Physiotherapist and asking questions during the medical encounter.

2.5 Patient Readiness Attributes

For an individual to perform any role well, three attributes are required to obtain: role clarity, ability and motivation (Bowen 1986; Schneider and Bowen 1995; Ostrom 2003). These factors have been referred to as “patient readiness

attributes” (Dellande 1999; Rodie and Kleine 2000; Dellande et al. 2004). Other authors like Von Korff *et al.* (1997) and Skolasky *et al.* (2008) called them as “patient activation factors”, which they defined as “an individual's propensity to engage in adaptive health behaviour that may, in turn, lead to improved outcomes”. Dellande (1999) proved that these attributes (role clarity, ability and motivation) are not only important in bringing about patient participation in the service delivery process but are also important in gaining patient compliance with his/her role that needs to be continued outside the service organization.

2.6 Patient Compliance

Although seem similar, Dellande (1999) had clearly distinguished between participation and compliance, participation occurs within the service organization while compliance occurs outside the service organisation with no direct control of the service provider. Compliance is defined as: “The extent to which the behaviour of the patient matches the recommendations of the prescriber” (NCCSDO 2005).

The concept of adherence/compliance in physiotherapy is multi-dimensional. Its dimensions include attendance at scheduled sessions, following physiotherapist’s advice, undertaking the prescribed home-exercises, regularity of practicing such exercises and the extent to which these exercises were performed correctly (Kolt *et al.* 2007).

2.7 Treatment Goals

Treatment goals have always been used as a motivational tool to improve patient’s compliance with exercise programs (Bassett and Petrie 1999; Cited by Jack *et al.* 2010). Collaborative patient-physiotherapist goals are based on the daily activities the patients wish to achieve; these are usually modified by the physiotherapist to ensure that these goals are realistic (Cott and Finch 1991; Jack *et al.* 2010).

For Low Back Pain patients, goals are usually associated with overcoming back pain, independence in everyday activities, ability to do sport and acquiring general physical capacity at home and/or at work (Mannion *et al.* 2010).

2.8 Goal Attainment

Adherence to physiotherapy guidelines and recommendations is strongly related to goal attainment. Fisher and Hardie (2002) found that the completers of three weeks LBP management programme, showed significant improvements in walking tolerance and physical functioning during sitting, standing and taking the stairs. The same results were found by Rutten *et al.* (2010) who demonstrated that the higher the adherence to physiotherapy guidelines, the better is the improvement in patients’ physical functioning and the lower is the need for

physiotherapy treatment sessions. In the field of Low Back Pain (LBP), there is a challenge in the identification of appropriate methods that measure the success of physiotherapy programs in order to evaluate treatment outcomes (Mannion *et al.* 2010).

2.9 Developing the Conceptual Model

The development of my conceptual model was influenced by three other models and is adapted from Dellande (1999), Johnson *et al.* (2009) and Rehman and Dean (2010) to provide a theoretical explanation of the reason behind the success of compliance dependant services like physiotherapy which was the context for this study. Dellande (1999) argued that role clarity, motivation and ability are important attributes to bring about patient participation in the service encounter (inside the service organization) and also patient compliance to treatment recommendation outside the service organization. She also argued that compliance is the key predictor for goal attainment (in terms of overcoming pain and increasing quality of life) which consequently leads to patient satisfaction. Johnson *et al.* (2009) explained that doctor participation in terms of “provision of information” and “support” triggers both patient participation in the service encounter and compliance to treatment recommendation. They also explained that all of these three variables are direct antecedents to satisfaction.

Rehman and Dean (2010) found that both doctor participation and patient participation in the service encounter can affect the perception of service quality of the whole department where the service was delivered. Few more arrows were added to the model according to previous studies like Skolasky *et al.* (2008) who said that providing the patient with information and ample time should make the patient clear about his role and make the patient motivated towards participation. Figure (1) shows the new conceptual model.

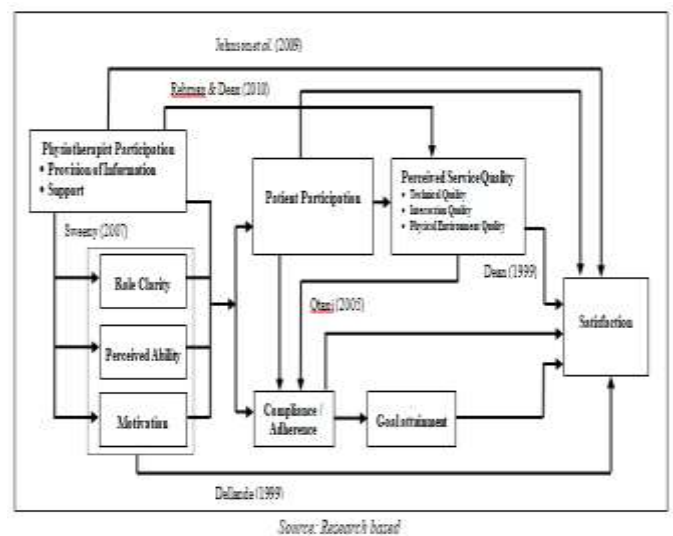


Fig -1: The Proposed Conceptual Model

3. METHOD

To be able to meet the research objectives, this study used a deductive approach and implemented a quantitative methodology. It is to some extent exploratory in the way it has explored the relevant literature to build the research framework.

The study used the survey strategy to collect descriptive data and obtain explanatory results. Arabic and English questionnaires were used to collect the data where the sample size contained 342 Low Back Pain patients in three public and three private physiotherapy departments in Kuwait.

The development of the questionnaire was guided by the academic literature that discussed patient satisfaction and its predictors. The questionnaire was divided into eight sections. The first section dealt with socio-demographic characteristics of Low Back pain patients.

The rest of the sections dealt with physiotherapist participation, patient readiness attributes, patient participation, perceived service quality, compliance, goal attainment and patient satisfaction. All sections except for the first section used 5-point Likert-Scale. The collected data will be analysed and interpreted using advanced techniques through SPSS and Excel applications.

The population of interest was patients aged 18 and above who have been diagnosed primarily with acute or chronic Low Back Pain, and who have already received and completed a set of recommended physiotherapy sessions for their Low Back Pain in Kuwait. Set of sessions can vary from 7 to 12 consecutive sessions depending on the severity of the symptoms and duration of the session (Critchely *et al.* 2007). Physiotherapists asked patients to fill in the questionnaire at the end of their final session of their scheduled treatment.

Exclusion criteria: for this study we excluded cases in which back pain was associated with a serious spinal pathology, spine surgery and vertebral fractures in order to avoid the perception of intolerable pain. This was insured by the chief physiotherapists of the studied hospitals and assistance of nurses of the department.

Although, non-specific Low Back Pain is a common medical problem in primary care centres and hospitals in Kuwait, there has been no published data concerning its prevalence in the country (Shehab and Aljarrallah 2002; Al-Awadhi *et al.* 2004). Therefore, the exact total population of patients with Low Back Pain who are being treated in Kuwait is not available.

The reason for the absence of reliable resources of documented data on LBP patients is that private and public hospitals in Kuwait are not required by the Ministry of Health to prepare diagnostic statistics of the conditions

treated there. The sample size collected for this study is 342 physiotherapy patients with Low Back Pain.

4. RESULTS

4.1 General Information Analysis

The gender distribution of the sample collected which happened to be distributed nearly evenly between genders as it consists of 51 % males and 49 % females. 78 % of the sampled patients were Kuwaitis while the rest are non-Kuwaitis. The vast majority of the sampled patients with LBP fell into two categories of age "28-37" and "38-37" years old.

This is actually matching with the study of Hulen (2008) who argued that the first episode of LBP usually occurs at the late twenties. 33% of our sample of patients was visiting private hospitals, while 67% were visiting public hospitals. Further demographic analysis shows that more than 50% of our patients are holding university degree and above.

This is matching with the fact that 87% of the population in Kuwait are enrolled in schools and that most of the Kuwaiti population are well educated (WHO 2011). Also, the majority (59%) of our sample of LBP sampled patients are full time workers which may indicate that they are having work-related Low Back Pain. 55% of our patients are in the acute phase of the condition as they have been visiting the physiotherapy departments for their LBP for three months or less. While 37% are having chronic LBP as they have exceeded six months visiting the department.

4.2 Conceptual Variables Analysis

Based on the result of factor analysis, physiotherapist's participation variable was found to be covering one dimension as both "provision of information" and "physiotherapist's support" dimensions are considered to be one. Also, it was proved by the factor analysis that perceived service quality variable is covering two dimensions, and these are: "the technical and interaction quality" and "the physical environment quality".

All variables were found to be valid to take into the consideration for further analysis as all of these variables have KMO values of greater than 0.5. Also factor loadings of different items are all greater than 0.3.

4.2.1 Reliability Test

To test the internal consistency of the items, reliability test was conducted; this is supposed to check whether a set of questions for a certain variable were able to obtain the same result repeatedly (Pallant 2010). Cronbach's alpha is used to test the average correlation of items of certain instrument where the value ranges from 0 to 1.

The lowest accepted alpha coefficient is 0.7 for reliability testing (Field 2009). As shown in Table (1), all tested variables are reliable with high values of alpha coefficient of greater than 0.7 and close to 1 and hence the survey instrument used for this research is considered reliable.

Dimension Name	Number of statements	Cronbach's Alpha (α) (Standardized)N=342
Physiotherapist's Participation	6	0.920
Motivation	4	0.943
Perceived Ability	4	0.890
Role clarity	4	0.922
Patient participation	4	0.834
Perceived SQ	14	0.961
Compliance	4	0.853
Goal Attainment	3	0.756
Patient Satisfaction	7	0.936

Table -1: Cronbach Reliability Test

4.2.2 Descriptive Analysis

When looking at the studied variables shown in Figure (2), it was found that more than half of the patients (58%) perceived that physiotherapists were providing them with relevant information and gave them ample time during consultations. However, 52% of the patients had overcome their back pain and increased the quality of their lives which is disappointing. Overall, 59% of the patients were satisfied with the treatment they received while 19% expressed their dissatisfaction towards their physiotherapy sessions which can be considered as an alarming level of dissatisfaction.

4.2.3 Correlation Analysis

Table (2) shows that all the variables are demonstrating positive relationships with each other without having any relationship in extreme value. The strongest relationship is between of role clarity and technical & interaction quality (.805) followed by motivation and perceived ability (0.796).

The relationship between the independent variables is significant positive relationship as r values are all greater than (0.3) and less than (0.9) which avoided the possibility of having over co-linearity of the data.

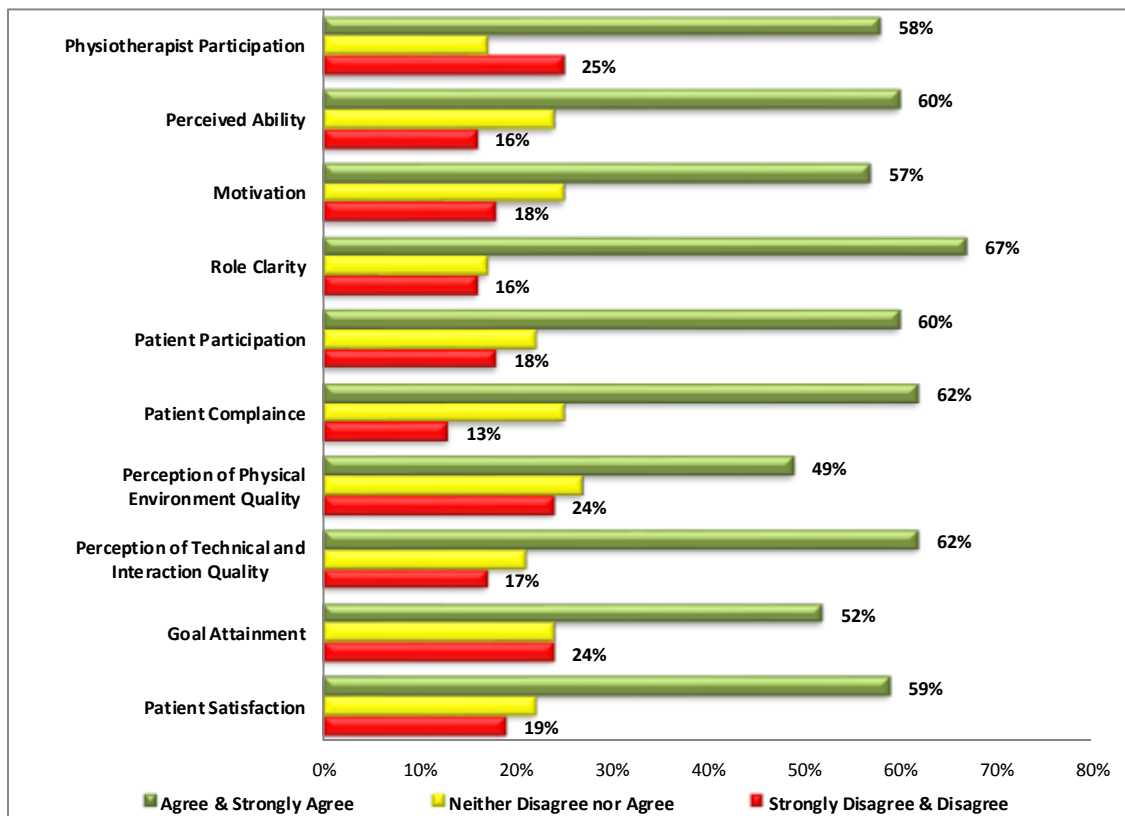


Fig -2: Descriptive Analysis of the Conceptual Variable

	Physiotherapist Participation	Role Clarity	Motivation	Ability	Patient Participation	Per. Physical Environment Quality	Per. Technical & Interaction Quality	Compliance	Goal Attainment	Patient Satisfaction
Physiotherapist Participation	1									
Role Clarity	.794**	1								
Motivation	.492**	.538**	1							
Perceived Ability	.404**	.521**	.796**	1						
Patient Participation	.462**	.512**	.553**	.487**	1					
Perceived Physical Environment Quality	.635**	.704**	.449**	.415**	.369**	1				
Perceived Technical & Interaction Quality	.763**	.805**	.558**	.538**	.463**	.731**	1			
Compliance	.312**	.374**	.654**	.679**	.494**	.278**	.384**	1		
Goal Attainment	.537**	.600**	.681**	.644**	.569**	.519**	.548**	.643**	1	
Patient Satisfaction	.709**	.731**	.678**	.625**	.564**	.678**	.764**	.558**	.763**	1

Table -2: Correlation Analysis

Pearson Correlation is significant at $p < 0.01$ (2-tailed); $N=342$. Source: Data Based

4.2.4 Regression Analysis

A total of regression analyses were conducted for this study. The first regression analysis has been used where our dependant variable was patient participation and the independent variables were physiotherapist participation, motivation, perceived ability and role clarity. As shown in

Figure (3), two out of the four variables are statically significant (Motivation and role clarity) with an R square of 38% of the variance leading to patient participation during the service encounter. However, motivation” has a larger Beta Coefficient (0.333) than the role clarity (0.226) which means that motivation has the largest contribution to explain patient participation.

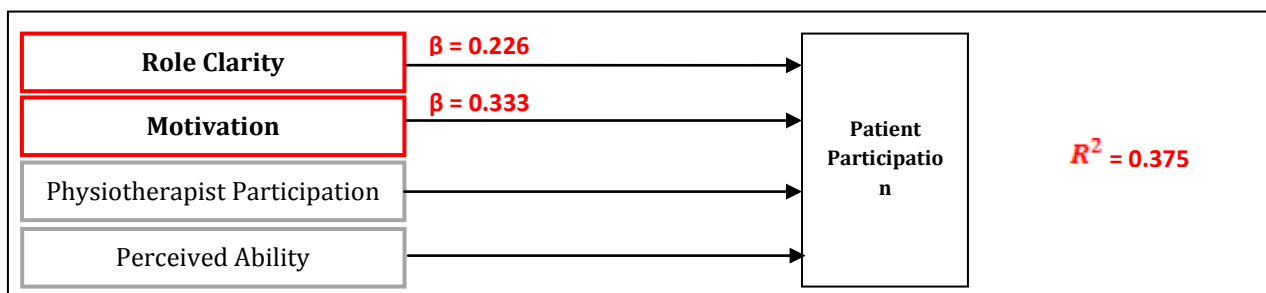


Fig -3: Regression Model of Patient Participation

Patient compliance was measured in our study in terms of attending the physiotherapy sessions and practicing the recommended home exercises in addition to changing some wrong behaviour that exacerbate back pain like wrong ways of lifting weights, sitting positions and standing positions. When examined patient compliance as

the dependant variable, R square indicated that the independent variables or predictors are able to explain 52% of the variance leading to patient compliance. Figure (4) illustrates the Beta coefficients of the significant predictors of patient compliance specifying its contributions to predicting the dependant variable. Three

out of the six variables are statically significant: Motivation ($\beta=.261$), patient participation ($\beta=.187$) and

perceived ability ($\beta=.428$) with the largest contribution with patient compliance.

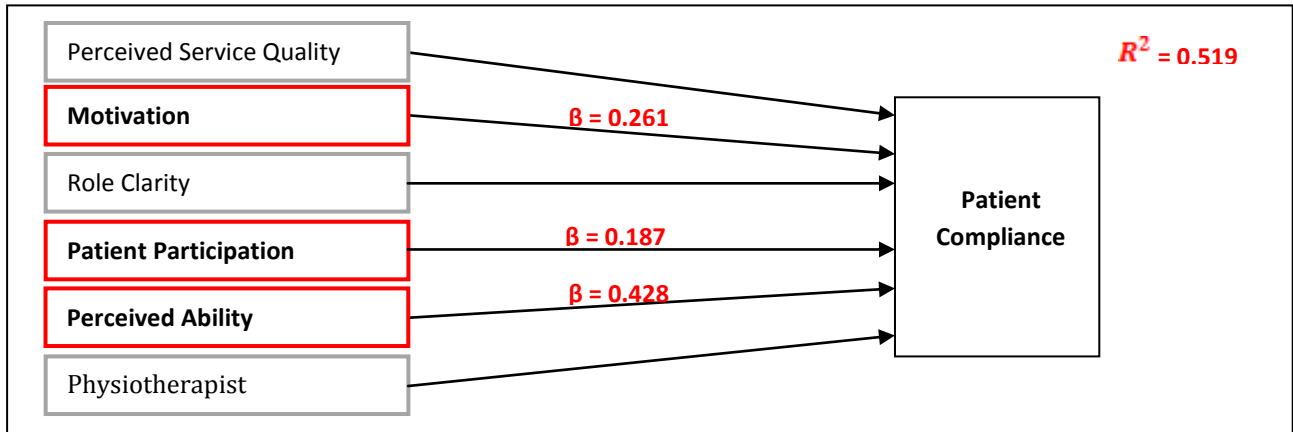


Fig -4: Regression Model of Patient Compliance and Its Predictors

When having perceived service quality as the dependant variable, we found that the regression model is statistically significant ($p\text{-value} < 0.05$) where R square indicates that the independent variables or predictors are able to explain 61% of the variance leading to the perceived service quality. The two predictors of perceived service quality are statically significant (physiotherapist participation and patient participation). However, physiotherapist participation has a larger Beta Coefficient (0.708) than patient participation (0.137). We can see that patients’ perceived service quality is mainly influenced by physiotherapist participation where as they see their own participation as not that important. This conclusion is contradicting to the findings of Rehman and Dean (2010).

Moving forward with our regression analysis, we wanted to explore different factors that influence patient’s satisfaction in public and private hospitals. For patients to be satisfied as seen in Table (3), it was found that there are three most important variables that are very close to each other in their contributions (beta coefficient). Firstly, is the physical environment quality in terms of having modern equipments and employees with neat appearances. Secondly, achieving the goal is important in terms of overcoming pain and increasing the quality of life. And thirdly, is motivation where patients are motivated to participate effectively in treatment plan and motivated to adhere to treatment recommendations.

In the public sector, goal attainment comes first by far followed by technical and interaction quality in terms of delivering the service at the time promised and giving individual attention to patients. Then comes the physiotherapist’s participation manifested in giving sample time during consultation and providing relevant information about the condition or the illness.

Private PT Departments	Public PT Departments
R Square = 0.760	R Square = 0.809
1. Per. Physical Environment Quality (B = 0.238)	1. Goal Attainment (B = 0.322)
2. Goal Attainment (B = 0.237)	2. Per. Technical and Interaction Quality (B = 0.265)
3. Motivation (B = 0.219)	3. Physiotherapist Participation (B = 0.197)
	4. Per. Physical Environment Quality (B = 0.112)

Table -3: the result of Regression Analyses for Public and Private Hospitals

4.2.5 Structural Equation Modeling

This part is covering the analysis of the overall sample and the relationship between patient satisfaction and its direct predictors. Structural Equation Modelling (SEM) is a potent statistical technique that is to analyze a series of dependence relationships between variables.

The endogenous (observed) variables are: physiotherapist participation (phy_parti), ability, motivation (motive), clarity, patient participation (patient_parti), goal attainment, perceived service quality (SQ) and satisfaction (Sat). The exogenous (unobserved) variables are: physical environment(phys_envir) and interaction and technical quality (tech_inter).

According to the resultant model in Figure (5), SEM shows many direct and indirect relationships. Patient satisfaction is directly related to perceived service quality, goal attainment and motivation. However, it has in direct relationship with role clarity, perceived ability, patient participation, physiotherapist participation and compliance.

The model is considered to have a good fit as GFI (goodness of fit) value is 97%. A second index that wastested is CFI (comparative fit index) value was found to be 0.988 which is considered within the range. Also, RMR (absolute value of the covariance residuals) was found to have a value of 0.03 which indicate a good model fit. Another useful fit index is RMSEA (root mean square error of approximation) with a value of 0.068 which is also considered to be fit.

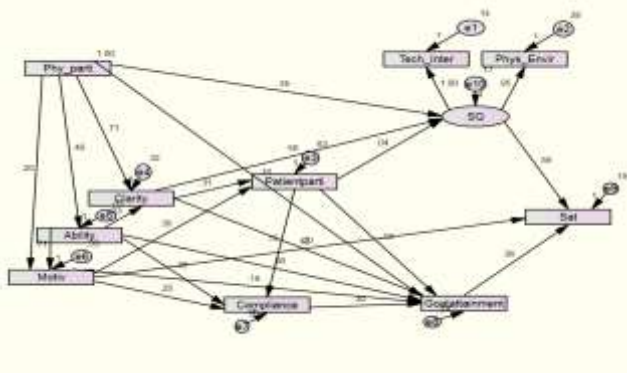


Fig -5: Patient Satisfaction Path Model, Using Structural Equation Modeling

4.2.6 Factorial Analysis

In another step in our analysis, we sought examining goal attainment and satisfaction together. This was done to be able to answer the following question: Which are the best physiotherapy practices (through goal attainment and satisfaction) as perceived by patients? To do so, factorial analysis followed by tree analysis were performed. Figure (6) and (7) provided the factorial positioning of the observations.

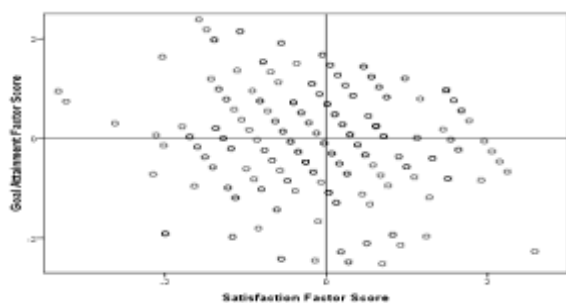


Fig -6: Factorial positioning observations of Goal Attainment and Satisfaction

Figure (7) illustrates a plotted two dimensional graph that reflects the factorial analysis scores that represents the observations of the total sampled patients by crossing both goal attainment and overall satisfaction. According to this analysis, it has turned out that third of our sample (33%) have achieved their goal and are satisfied.

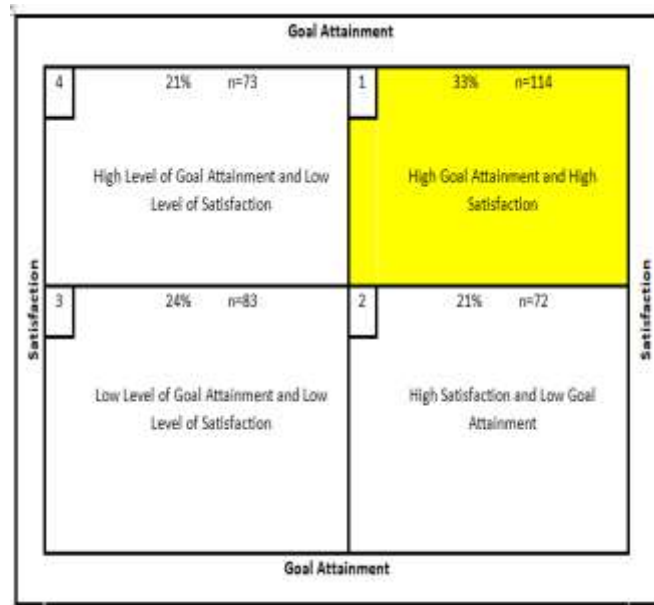


Fig -7: Factorial positioning observations of Goal Attainment and Satisfaction

4.2.7 Discriminated Analysis

Further analysis was carried out to explore the variables that allow differentiation or discrimination between these positioning in figure (7) and to find out the reasons behind this classification of different high/low levels of patient satisfaction and goal attainment within the studied physiotherapy departments of all six hospitals. To achieve this objective we have run a discriminate analysis, which provided the following results. Table (4) shows that while all the variables (except one) discriminate within the first function, the variables that discriminate the most between those patients who claim to be highly satisfied and having largely attained their goals compared to the other three groups are: the perceived technical and interaction quality (coefficient .795) and motivation (coefficient .752). These are followed by role clarity (coefficient .707).

	Function		
	1	2	3
Technical & Interaction Quality	.795*	-.531	.135
Motivation	.752*	.408	.085
Role Clarity	.707*	-.114	-.328
Perceived Ability	.680*	.264	-.237
Physiotherapist participation	.677*	-.274	-.109
Physical and environment quality	.668*	-.185	-.122
Patient participation	.479*	.154	.076
Compliance	.515	.530*	.462

Table -4: Physiotherapy Best Practice Discriminant Analysis-Structure Matrix

Table (5) indicates that 54% of original grouped cases were correctly classified. Also the same table shows that the patients who believe to have attained their goal in physiotherapy and had an overall high satisfaction (square 1) were classified the best with 70%.

Goal Attainment & Satisfaction		Predicted Group Membership				Total
		High Goal Attainment & High Satisfaction	High Satisfaction & Low Goal Attainment	Low Satisfaction & Low Goal Attainment	Low Satisfaction & High Goal Attainment	
Original Count	High Goal Attainment & High Satisfaction	80	17	0	17	114
	High Satisfaction & Low Goal Attainment	13	27	19	13	72
	Low Satisfaction & Low Goal Attainment	0	20	49	14	83
	Low Satisfaction & High Goal Attainment	24	8	12	29	73
%	High Goal Attainment & High Satisfaction	70.2	14.9	0	14.9	100.0
	High Satisfaction & Low Goal Attainment	18.1	37.5	26.4	18.1	100.0
	Low Satisfaction & Low Goal Attainment	0	24.1	59.0	16.9	100.0
	Low Satisfaction & High Goal Attainment	32.9	11.0	16.4	39.7	100.0

54.1% of original grouped cases correctly classified.

Table -5: Physiotherapy Best Practice Discriminant Analysis-Classification Results

5. DISCUSSION

Upon examining the proposed model in the context of physiotherapy for Low Back Pain (LPB) patients in Kuwait, it was found that patient participation in the service encounter does not directly influence satisfaction which is contradicting Johnson *et al.* (2009) findings. The most important determinant of patient satisfaction in physiotherapy for LBP is the perceived technical & interaction quality which is agreeing with Rouch and Sonstroem (1999) who argued that patient satisfaction in physiotherapy is mainly influenced by non-clinical issues. This finding is actually typical in real life where patients lack the experience and the knowledge to judge the clinical issues. And hence, patients rely more on the interpersonal interactions with the employees of the physiotherapy departments (nurses, physiotherapists and receptionists).

Surprisingly, role clarity of the patient is not a significant predictor for patient compliance, this means that being clear about the importance of adhering to the number of prescribed sessions and the importance of practicing home-exercises is not enough for patients in Kuwait to comply to treatment recommendations, which also contradict Dellande *et al.* (2004) results. The patients in the examined departments are more complying when motivated by the physiotherapists and when they have more perceived ability (self-efficacy) which also can be significantly influenced by the senior physiotherapist in the service encounter. In general, the determinants of patient satisfaction in physiotherapy services in Kuwait for low back pain are: goal attainment, perceived service quality, and the extent of physiotherapist participation. However, determinants of satisfaction differed between private and public hospitals. Further detailed conclusions will be discussed in chapter five.

6. CONCLUSIONS

The conclusion that we have drawn from the literature review is that patient's perception of service provider participation in terms of provision of information and support is the key predictor for the success of the treatment. However, Kuwait seem to be way back on this new era as only 59% of the patients surveyed agreed that their physiotherapists provided relevant information and explanations about the treatment and had ample time in the service encounter with their physiotherapists. Patients treated in the public sector perceived less physiotherapist participation than in the private sector. Generally, only 56% of the patients reported to be overall satisfied with the physiotherapy service received with the highest percentage of satisfaction coming from the private sector.

When examined satisfaction with the whole sample with Structural Equation Modeling (SEM), the study revealed many contradictions with previous studies. Satisfaction was not directly influenced by patient participation which is contradicting the findings of Johnson *et al.* (2009) and Dellande (1999). Also compliance did not have direct

influence on with satisfaction however, it has strong interrelationship with goal attainment which means that compliance is still considered to be related to satisfaction but indirectly. Role clarity and ability were not found to have direct influence on satisfaction which all contradicts

Kotze and Plessis (2003). However, what was agreeing to the same author is the direct relationship between motivation and satisfaction. SEM has shown direct influence from goal attainment manifested by overcoming back pain and increasing the quality of life. This finding is agreeing with Dellande (1999). The same finding was obtained when applying the Discriminant analysis as it was revealed that goal attainment is the main important factor that discriminates between patients' levels of satisfaction. This is agreeing with Beattie *et al.* (2002) who argued that patients are more concerned with clinical issues than non-clinical ones. However, the same analysis showed that the second contributor to satisfaction is the perceived technical and interaction quality of the physiotherapy department visited. This is agreeing with Vinagre and Neves (2007) and Choi *et al.* (2004) who found that perceived service quality is strongly related to patient satisfaction. Furthermore, the service provider participation in terms of provision of information and support was not found to directly influencing satisfaction which is contradicting with Johnson *et al.* (2009) and May (2001) who studied satisfaction in physiotherapy. In general our findings are that patients' satisfaction in physiotherapy is related to the quality of the treatment process and its outcome which is also matching with May (2001) results.

To have best physiotherapy practices, healthcare providers should concentrate on perceived technical and interaction quality. This was revealed through a factorial analysis that was done to position patients in relation to their overall satisfaction and goal attainment in order to determine the factor that discriminate between high and low goal attainment/satisfaction. The analysis revealed that the factor that discriminate the most between the identified groups is the perceived technical and interaction quality. This is a typical real life result; patients usually depend on the interpersonal interactions to judge services because they lack the experience to judge medical conditions. Also, the analysis revealed that the second significant Discriminant factor is motivation. Motivation is an important factor which impacts on compliance and consequently leads to goal attainment.

7. RECOMMENDATIONS

After evaluating the findings of the study, many recommendations can be made for the managerial side. Based on the descriptive analysis that showed low percentage of satisfied patients, it is recommended to assess patients' satisfaction on the received physiotherapy services in a repeat pattern to examine improvement of the service. According to the result of the discriminant

analysis, service providers are recommended to increase the technical and interaction quality to be perceived as best practices.

The structural equation modelling, and the regression analysis of patient compliance have shown the importance of motivation and therefore we recommend to implement new strategies to increase motivation that help patients to adhere to home exercises such as the use of supporting materials (e.g. CDs and written materials). Also, based on the tree analysis of patient compliance and regression analysis of perceived service quality, patient participation was found to be very important and we recommend training physiotherapists to acquire better communication skills to empower patients to participate in plan.

Moreover, physiotherapy service providers are recommended to conduct different marketing researches to capture the expectations of patients in such departments. Also, the result of t-test between private and public hospitals illustrates differences in the service and hence we recommend the directorate of physiotherapy to implement standards for physiotherapy practice in Kuwait to guarantee the consistency of the service and to match the high standards in developed countries.

From an academic perspective and because compliance is very subjective and very hard to measure, we think it is the role of academics to come up with a standard methods for measuring compliance in healthcare services in general and in physiotherapy in particular. Also, the study has revealed to us the importance of motivation triggered by the physiotherapist and therefore, further researches are recommended to better understand other predictors of motivation.

7.1 Future Research

For future researches it is desirable to include other dimensions of patient satisfaction in physiotherapy departments such as location, waiting time, privacy, convenience and easiness of access. Nevertheless, a future study can be conducted using additional elements to the model like patient trust and perception of pain as determinants of patient compliance.

Different methodologies can be used like investigating physiotherapists' satisfaction and dedication to work. This study used self-report compliance scales which may be biased as patients may overstate their actual compliance. Therefore, it is suggested for future researches to consider examining compliance from the physiotherapist perspective. Also, it is recommended for future studies to combine both quantitative and qualitative approaches to better understand patient satisfaction in physiotherapy departments through in-depth interviews. Moreover, the same research can be conducted on another industry like fitness clubs or lose weight programmes.

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