Original Article

Exploring Patient Satisfaction: The Role of Special Training Needs, Exercise Routine, and Attitudes Toward Diabetic Patient Competence

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Abstract

Purpose: The aim of this research was to investigate the factors which influences the diabetic patient's satisfaction within the healthcare sector. To accomplish this objective this research tests the direct relationship of need for special training and exercise routine with the patient's satisfaction. Moreover, this research further explores the direct relationship of need for special training and patient's satisfaction by using exercise routine as a mediator and attitude toward diabetic patient competence as a moderator. **Method:** An overall sample of 182 diabetic patients employed in various organizations and undergoing treatment at different hospitals was selected using convenience sampling. Data was collected by using a standardized questionnaires and then Stata's SEM approach was used to assess the relationships of variable. **Findings:** Findings of this research explores that there is a positive and significant relationship exists among the special training, exercise routine, and patient's satisfaction. Moreover, findings support the proposed moderation and mediation hypotheses by explaining that there is a significant relationship exists among these paths. It verifies that attitude toward diabetic patient competence have a significant moderating effect and exercise routine has a significant mediating effect in the direct relationship. **Originality/Implications:** Diabetes patient satisfaction in Saudi Arabia's healthcare industry is examined in this study. The statistics demonstrate that specific training, fitness promotion, and supportive provider attitudes boost patient satisfaction. These findings highlight the need for patient-centered diabetes management in healthcare policy and practice.

Keywords: Need for Special Training, Exercise Routine, Attitude Toward Diabetic Patient Competence, Patient Satisfaction, Healthcare.

Introduction

Due to the global rise in diabetes and its influence on healthcare systems, healthcare satisfaction, especially among diabetics, has received substantial attention. Chronic diabetes requires continual medical treatment, patient self-management, and healthcare provider involvement to prevent acute complications and long-term harm.[1] Patient satisfaction in diabetes care affects treatment adherence, health outcomes, and quality of life.[2] Patient satisfaction is linked to better medication adherence, fewer emergency room visits, and lower hospitalisation rates, which help healthcare systems manage the cost burden of diabetes.[3] Quality of communication with healthcare professionals, accessibility, continuity of care, and patient-centered approaches all affect patient satisfaction in chronic illness management.[4] Diabetic patients need information and support to make lifestyle changes including diet and exercise.[5] Thus, patient satisfaction depends on healthcare personnel' expertise and attitude. Diabetes management training for healthcare personnel can improve patient satisfaction by improving their skills and knowledge.[6] Including exercise in diabetes management is very important. Diabetics benefit from regular exercise in glucose control, cardiovascular risk reduction, and well-being.[7] Healthcare providers are urged to recommend exercise in their care plans. This comprehensive diabetes treatment strategy emphasises the need for medical and lifestyle

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change training for healthcare practitioners.[8] Healthcare professionals' belief in and support of patient competence the patient's ability to control their health can also affect patient satisfaction.[9]

Numerous empirical studies have investigated that how diabetes care leads the patients' satisfaction.[10] The relationship between patient satisfaction and doctor-patient communication is one of the significant findings.[11] According to numerous studies, patients who believe their doctors have listened to them and understand them are happier and more content.[12] Cesar *et al*.[13] explored a relationship between patient satisfaction and effective communication, which includes empathy and active listening. Patients with diabetes, who need to interact with their physicians in order to control their condition, were particularly involved. Patient satisfaction has grown as a result of specialised healthcare professional training.[14] Diabetes management experts have the ability to improve patient satisfaction and deliver patient-centered treatment, as found by Shen *et al*.[15]. According to Alkahtani *et al*.[16], knowledgeable medical professionals can help patients control their diabetes by giving them personalised information and support. There has also been a lot of research done on the contribution of exercise to increased patient satisfaction. Dankoly *et al*.[17] found that diabetics who exercised regularly had better glucose control and cardiovascular health. Since patients felt healthier and more in control, these health improvements enhanced patient satisfaction. Wardian *et al*.[18] observed that include exercise advice in treatment plans made doctors appear more holistic and proactive, improving patient satisfaction. Healthcare practitioners' attitudes about patient competency also affect patient satisfaction.[19] Patients feel empowered and engaged when doctors express trust in their diabetes management, according to studies.[12,19]

Although diabetic patient satisfaction research is abundant, but still numerous areas remain uncovered that need additional research.[20] More research on the relationship between specialised training, exercise, and patient satisfaction is needed. These aspects have been studied separately, but integrated research on patient satisfaction is lacking.[21] Healthcare practitioners' specialised training and exercise promotion may affect patient perceptions and outcomes.[22] Most studies also focus on the direct benefits of specialised training and exercise regimens on patient satisfaction without considering mediating or moderating variables.[23] Healthcare providers' perceptions towards patient competency as a moderating factor have not been substantially studied, and understanding how these attitudes affect the efficacy of specialised training in promoting patient happiness may reveal patient satisfaction mechanisms.[24] Patient satisfaction should be tracked over time in relation to healthcare provider practices, training, and patient behaviours in longitudinal research.[25] To create effective interventions for different patient populations, inclusivity and more research is necessary.[26] Health Belief Model (HBM)[17] and Self-Determination Theory[13] underpin this research. The HBM shows that people are more likely to exercise if they perceive a high risk of a health problem and feel the advised actions will reduce their risk. Specialised training helps diabetes care workers convey health risks and advantages, improving patient satisfaction. In contrast, SDT emphasises autonomy, competence, and relatedness to motivate health behaviours intrinsically.[10] Healthcare practitioners that encourage patient competence and autonomy are more likely to motivate and satisfy patients. This research aims to determine how training, patient competence attitudes, and exercise habits affect diabetes patient satisfaction. This study examines whether exercise routines mediate the association between specialised training and patient satisfaction and whether healthcare personnel' attitudes towards patient competence moderate it. This research tries to better understand patient satisfaction and propose ways to improve diabetes patient care by examining these interactions. In conclusion, this study uses a multifaceted approach to patient satisfaction to fill gaps in the literature. This study will use theoretical frameworks like the HBM and SDT to better understand how specialised training, activity promotion, and supportive attitudes might improve diabetes patient satisfaction. This research should inform healthcare practices and policy to improve diabetic patients' quality of care and health.[16]

Literature Review

For diabetics, patient satisfaction is a key indicator of healthcare quality. The literature emphasises that diabetes patient satisfaction includes contact with healthcare providers, accessibility and continuity of care, and treatment plan efficacy.[27] Effective communication plays a key role because patients are happier when they feel heard and understood by their doctors.[28] Research shows that patient-centered communication boosts satisfaction and treatment adherence, improving health outcomes.[29] Moreover, accessibility and continuity of service also affect patient satisfaction.[30] Healthcare services and the ability to see the same clinician are crucial for diabetics who need frequent monitoring and treatment modifications.[31] Patients who have constant access to their doctors and can quickly book visits are more satisfied, according to Saaei and Klappa[32]. Besides these criteria, treatment efficacy affects diabetes patient satisfaction. Medication, lifestyle changes, and blood glucose monitoring are needed to control diabetes.[33] Patients who believe their treatment plans control symptoms and prevent complications are happier with their care, according to research.[34] Patients who understand their disease and treatment plans are more likely to follow recommendations and be satisfied with their care.[35] The literature emphasises that a comprehensive, patient-centered strategy that meets diabetic patients' different requirements is vital for great healthcare satisfaction.[36]

This hypothesis focuses on "need for special training" and "patient satisfaction with healthcare." Healthcare providers must have specialized training to manage

diabetic patients.[1] This includes diabetes-specific medical knowledge, communication, patient education, and diabetes management technology training. Diabetes patients' satisfaction with healthcare is a multidimensional concept that measures how effectively healthcare treatments meet or surpass their expectations.[3] It comprises care quality, provider interpersonal skills, communication efficacy, service accessibility and convenience, and patient experience. Specialised healthcare practitioner training regularly improves patient happiness, according to study.[5] Research shows that doctors and nurses who receive particular training in diabetes treatment are better equipped to meet patients' needs. Gupta *et al*.[7] found that diabetes education improved patient-centered therapy and patient satisfaction. Trani *et al*.[10] observed that patients were happier with specially trained doctors. Because of greater communication, comprehension, and medical control of patients' issues.[12] Doctors with specialised training can better teach and strengthen their chronic disease patients, making them happier.[16] Healthcare providers must understand diabetes because patients require extensive and continuing treatment. Good professionals can deliver more accurate diagnoses, customised treatment plans, and better patient care, making them happier.[18] Providers gain patient trust by receiving specialised speech and social skills training. Patient satisfaction depends on trust and rapport, which make patients feel valued, understood, and confident in their care.[20] Thus, the hypothesis that improving diabetes care provider training will increase patient satisfaction is supported by the empirical evidence that specialised knowledge and skills are key determinants of quality care and positive patient experiences.

H1: Need for special training significantly influences the patient's satisfaction with healthcare.

Exercise routines and patient satisfaction with healthcare, particularly in chronic illnesses like diabetes, have been extensively studied.[22] Exercise as part of diabetes care has been found to increase health outcomes and patient satisfaction. Malatskey *et al*.[25] found that diabetics who exercised regularly improved their glucose management, cardiovascular health, and well-being. Since patients feel better and more in control, these health benefits frequently increase satisfaction.[27] Including exercise in treatment programmes makes doctors appear more holistic and proactive, which boosts patient satisfaction.[29] Based on these empirical findings, the hypothesis that exercise routines greatly affect patient satisfaction with healthcare can be created. Exercise improves physical, mental, and emotional wellness.[31] When doctors emphasise exercise and offer customised exercise plans, patients feel their care is comprehensive and personalized.[33] Patients need to feel like their doctors care about their complete health, not just their symptoms, to be satisfied. Patients feel empowered and self-confident when healthcare providers encourage and support exercise, which boosts satisfaction.[35] Patients who feel in charge of their health and actively participate in their care are happier with their healthcare. Exercise requires continual advice and changes, therefore healthcare specialists must be consulted regularly.[2] Patient satisfaction is linked to the patient-provider relationship, which this ongoing relationship can strengthen.[4] As patients observe health gains from exercise, they may credit these changes to their healthcare experts' care and guidance.[6] This confirms their healthcare system satisfaction. Fitness routines can also allow patients to express their successes and issues, allowing physicians to show empathy, encouragement, and expertise.[9] These beneficial interactions strengthen patient confidence and satisfaction with healthcare practitioners.[11] The hypothesis suggests that by integrating and supporting exercise routines into treatment plans, healthcare providers can significantly improve patient satisfaction, supported by empirical evidence[13] linking improved health outcomes and patient perceptions of comprehensive, personalised care to higher satisfaction.

H2: Exercise routine significantly influences the patient's satisfaction with healthcare.

Exercise and healthcare professional training have been shown to improve patient satisfaction, especially for patients with chronic diseases like diabetes.[28] Diabetes-trained doctors are more likely to propose and include exercise into their patients' treatment plans, according to research. Dankoly *et al*.[30] revealed that educated physicians may better customise exercise advice to specific patients, improving adherence and outcomes. Saaei and Klappa[32] found that diabetic patients who exercised as part of their comprehensive care plan had better health and higher satisfaction. This shows that regular exercise habits may mediate the relationship between specialised training and patient satisfaction, by helping to improve patient outcomes and satisfaction.[34] The premise that exercise routine considerably affects the relationship between the need for special training and patient satisfaction with healthcare requires studying their interconnected pathways.[36] Healthcare personnel are trained to stress the importance of lifestyle changes, including exercise, in diabetes management. This training helps providers create more effective, personalised fitness plans that patients will follow. Sharifi *et al*.[26] found that regular exercise improves blood glucose, cardiovascular health, and fitness in patients. Positive health outcomes affect patients' quality of life and care efficacy, which is crucial for patient satisfaction.[24] Thus, specialised training indirectly improves patient satisfaction by promoting and achieving fitness goals. Specialised training improves patient-provider interactions, which may mediate the role of exercise routines.[21] Highly trained providers can better discuss and resolve fitness barriers, set realistic goals, and motivate and encourage clients. This continual interaction creates a collaborative and supportive healthcare atmosphere, which improves patient satisfaction.[19] Patients are more likely to link health improvements from exercise to the quality and comprehensiveness of the care delivered, supporting their contentment with the healthcare system.[15] The hypothesis states that exercise routines mediate the effect of specialised

training on patient satisfaction. This mediation effect emphasises the importance of integrating exercise into chronic disease management and the role of specialised training in empowering healthcare providers to integrate it effectively, improving patient outcomes and satisfaction.[17]

H3: Exercise routine significantly mediates the relationship of need for special training and patient's satisfaction with healthcare.

Research shows that healthcare personnel' views about patient competence are crucial to managing chronic illnesses like diabetes.[21] Recognising and supporting patient competence the assumption that the patient can effectively manage their health has been found to improve patient satisfaction. Sharifi *et al*.[26] found that when healthcare providers trust patients' self-management skills, patients feel empowered and satisfied. This supportive approach improves the patient-provider connection by making patients feel respected and capable, which is essential for engagement and treatment adherence. Studies like Malatskey *et al*.[25] show that specialised training for healthcare providers often promotes a positive attitude towards patient competence, suggesting a moderating effect where supportive provider attitudes amplify the positive impact of specialised training on patient satisfaction.[18] Developing the hypothesis that attitudes towards diabetes patient competence considerably modify the association between the need for special training and patient satisfaction with treatment requires studying how these attitudes affect specialised training effectiveness.[17] Healthcare personnel receive specialised training to provide high-quality diabetic treatment. This training can improve patient satisfaction, but the provider's attitude towards patient competence can alter it.[13] A clinician with specialised training who doubts the patient's ability to self-manage may fail to communicate and empower the patient.[34] However, a physician who believes in the patient's competence is more likely to use their expertise to promote a collaborative care approach, where patients are actively involved in their treatment decisions, increasing satisfaction.[33] This interaction shows that supportive attitudes improve specialised training outcomes, reducing its effect on patient satisfaction. Examining patient-provider interactions shows how attitudes of patient competency moderate.[17] Professionals with specialised training and positive attitudes towards patient competence are more likely to promote patient autonomy through shared decision-making and personalised education.[10] These behaviours make patients feel more in control and competent in treating their disease, improving health outcomes and patient satisfaction. Abe *et al*.[6] observed that patients who felt their clinicians supported self-management had higher satisfaction and better health outcomes. This suggests that the provider's attitude towards patient competence moderates the association between specialised training and patient satisfaction.[3] In essence, empowering and supporting patients' talents boosts patient satisfaction, highlighting the relevance of attitudes in maximising the benefits of specialised healthcare training.

H4: Attitude toward diabetic patient competence significantly moderates the relationship of need for special training and patient's satisfaction with healthcare.

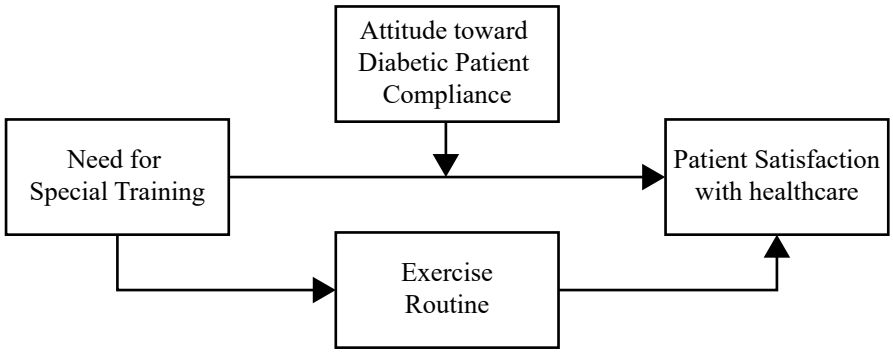

Figure 1: Research Model.

Methodology

The Saudi Arabian healthcare industry undertook the study to determine diabetic patient satisfaction criteria. The sample included 182 diabetic patients from diverse organisations who were being treated at hospitals across the kingdom. Participants received self-administered questionnaires during clinic visits to collect data. The study measured key variables like healthcare provider training needs, exercise routine adherence, attitude towards diabetic patient competence, and patient satisfaction with healthcare using validated scales from previous research (see table 1). To analyse the intricate interactions between research variables, Stata Structural Equation Modelling (SEM) software was used. SEM may estimate numerous regression equations and latent variable models simultaneously, allowing a full understanding of diabetic patient satisfaction determinants. The analysis included model specification, estimate, and fit evaluation. Initial measurement model specification included observable variables and latent components. Next, the structural model was estimated to determine the direct and mediated impacts of the independent variables (need for specific training and exercise routine) on patient satisfaction, as well as the moderating effect of attitude towards patient competence.

Table 1: Information of Questionnaire Used in this Research.

Variable	Number of Items	Study Reference
Need for special training	07	Anderson et al.[37]
Exercise routine	05	La Greca and Bearman[38]
Attitude toward diabetic patient competence	06	Anderson et al.[37]
Patient satisfaction with healthcare	03	Lu et al.[8]

Cronbach's alpha coefficients, composite reliability values, and average variance extracted (AVE) scores showed that the study variables' scales were reliable and valid. Confirmatory component analysis (CFA) showed that the observed variables measured their intended constructs, supporting the measurement model's convergent and discriminant validity. Chi-square fit statistics and R-square values showed the estimated model's goodness of fit and the proportion of variation explained by exogenous variables.

Results

This table shows the reliability and validity statistics for the study's core variables: need for specific training, exercise regimen, attitude towards diabetes patient competence, and patient satisfaction with healthcare. Reliability examines measurement consistency across several items, while validity measures whether the instrument measures what it should. The items evaluating healthcare providers' requirement for specialised training have great internal consistency with a Cronbach's alpha coefficient of 0.801. Composite reliability of 0.852 above the required criterion of 0.7, suggesting construct dependability and consistency. The average variance extracted (AVE) of 0.615 exceeds the acceptable criteria of 0.5, suggesting that the latent concept explains more than 61% of the observable variables' variance, supporting its validity.

Table 2: Variables Reliability and Validity.

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Need for special training	0.801	0.852	0.615
Exercise routine	0.900	0.840	0.598
Attitude toward diabetic patient competence	0.832	0.903	0.578
Patient satisfaction with healthcare	0.861	0.892	0.626

A high Cronbach's alpha coefficient of 0.900 indicates significant internal consistency among workout regimen components, indicating outstanding dependability. The composite reliability rating of 0.840 exceeds the threshold, confirming construct reliability. Validity is shown by the AVE of 0.598, which attributes 60% of the variance in the observable variables to the latent construct. With a Cronbach's alpha coefficient of 0.832, perceptions of diabetic patient competence are highly consistent. The composite reliability rating of 0.903 exceeds the acceptable level, confirming construct reliability. The AVE of 0.578 indicates that the latent construct accounts for almost 57% of observed variable variance, confirming validity. Patient satisfaction with healthcare has a Cronbach's alpha coefficient of 0.861, showing great internal consistency. The composite reliability rating of 0.892 exceeds the threshold, confirming construct reliability. The AVE of 0.626 shows that the latent construct explains 63% of observed variable variance, demonstrating validity.

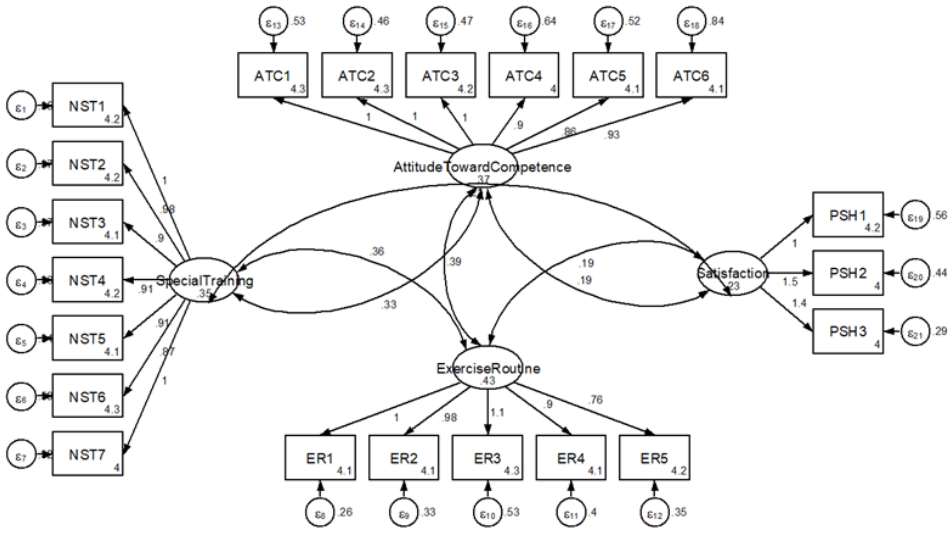

Figure 2: Estimated Model.

To evaluate the measurement model's fit, this table shows the confirmatory factor analysis (CFA) results. Each indicator's standardised factor loadings on its latent construct, standard errors, z-scores, p-values, and 95% confidence intervals are represented by the measurement coefficients (OIM Coef.). "NST" measures Need for Special Training, "ER" exercise routine, "ATC" attitude towards diabetic patient competence, and "PSH" patient satisfaction with healthcare. All indicators load heavily onto their latent constructs, as shown by very significant z-scores and p-values ($p < 0.001$). Need for Special Training has standardised factor loadings of 0.184 to 0.818, Exercise Routine 0.556 to 0.683, Attitude towards Diabetic Patient Competence 0.591 to 0.783, and Patient Satisfaction with Healthcare 0.184 to 0.500. These findings demonstrate the measurement model's convergent validity, showing that the observed variables measure their intended components.

Table 3: Confirmatory Factor Analysis.

Measurement	OIM Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
NST1	1.000	(constrained)				
NST2	0.699	0.057	14.483	0.000	0.982	0.725
NST3	0.732	0.062	14.038	0.000	1.032	0.755
NST4	0.210	0.112	11.806	0.000	0.340	1.105
NST5	0.738	0.052	99.091	0.000	0.335	1.034
NST6	0.794	0.109	11.162	0.000	0.224	1.003
NST7	0.818	0.108	11.262	0.000	0.221	1.005
ER1	1.000	(constrained)				
ER2	0.634	0.107	11.162	0.000	0.204	0.990
ER3	0.626	0.088	4.087	0.000	0.566	0.172
ER4	0.556	0.104	11.973	0.000	0.363	0.990
ER5	0.683	0.055	92.405	0.000	0.272	0.261
ATC1	1.000	(constrained)				
ATC2	0.648	0.125	10.107	0.000	0.306	1.014
ATC3	0.591	0.099	13.916	0.000	0.373	1.195
ATC4	0.704	0.052	95.959	0.000	0.151	0.046
ATC5	0.757	0.115	10.984	0.000	0.288	1.039
ATC6	0.783	0.060	81.821	0.000	0.102	0.110
PSH1	1.000	(constrained)				
PSH2	0.184	0.110	11.973	0.000	0.335	1.108
PSH3	0.500	0.104	13.117	0.000	0.363	1.164

Table 4 shows the measurement item fitness statistics and factor loadings for each indicator on its latent construct in the original sample. Fitness statistics, expressed by factor loadings, measure how much each indicator measures its underlying construct. Need for Special Training construct factor loadings range from 0.585 to 0.909, showing moderate to high correlation between indicators and the latent construct. For Exercise Routine, factor loadings range from 0.661 to 0.877, showing substantial indicator-construct relationships. Factor loadings for Attitude towards Diabetic Patient Competence range from 0.726 to 0.858, indicating moderate to high relationships. Finally, factor loadings for Patient Satisfaction with Healthcare range from 0.768 to 0.800, indicating moderate to significant relationships. These fitness statistics demonstrate that the measurement items capture the underlying constructs, validating the measurement model.

Table 4: Measurement Items Fitness Statistics.

Variable	Indicator	Original Sample
Need for special training	NST1	0.585
	NST2	0.620
	NST3	0.909
	NST4	0.795
	NST5	0.828
	NST6	0.846
	NST7	0.669
Exercise routine	ER1	0.661
	ER2	0.820
	ER3	0.807
	ER4	0.828
	ER5	0.877
Attitude toward diabetic patient competence	ATC1	0.843
	ATC2	0.858
	ATC3	0.726
	ATC4	0.756
	ATC5	0.772
	ATC6	0.750
Patient satisfaction with healthcare	PSH1	0.797
	PSH2	0.800
	PSH3	0.768

Table 5 shows the likelihood ratio, chi-square value, and p-values for the measurement model fit statistics. The likelihood ratio, 3270.722 for the model to the saturated model, compares the proposed model's fit to a hypothetical model that exactly matches the data. The baseline to saturated model comparison's chi-square score of 2035.039 compares the baseline model (no limitations) to the saturated model (perfect match). The proposed measurement model considerably differs from both the hypothetical perfect fit model and the baseline model ($p < 0.001$). Chi-square fit statistics can reveal the disparity between the proposed model and the data, but they are sensitive to sample size and may not accurately measure model fit. To evaluate model fit more thoroughly, comparative fit indices (CFI), root mean square error of approximation (RMSEA), and standardised root mean square residual (SRMR) should be evaluated.

Table 5: Chi-square Fit Statistics.

Fit Statistic	Value	Description
Likelihood ratio	3270.722	model vs. saturated
p > chi2	0.000	
chi2_bs(2728)	2035.039	baseline vs. saturated
p > chi2	0.000	

The saturated model and estimated model R-square statistics and SRMR are shown in Table 6. R-square values show how much variance in endogenous variables is explained by model exogenous variables. The saturated model's SRMR is 0.055, suggesting strong data fit. The estimated model's SRMR rises to 0.066, indicating a somewhat worse fit but still within acceptable limits. The R-square values for each endogenous variable show how much variance the exogenous variables explain. Need for Special Training, Exercise Routine, and Diabetic Patient Competence Attitude had R-square values of 0.503, 0.467, and 0.552. These values indicate that the model's exogenous variables explain 50% to 55% of each endogenous variable's variation, demonstrating moderate to strong explanatory power. These R-square statistics show how well the estimated model fits and how much the exogenous variables explain the endogenous variables' variability.

Table 6: R-square statistics Model Goodness of Fit Statistics.

	Saturated Model	Estimated Model	R Square
SRMR	0.055	0.066	
Need for special training			0.503
Exercise routine			0.467
Attitude toward diabetic patient competence			0.552

Path analysis shows direct and mediated interactions between major variables in the research model in Table 7. The standardised path coefficient (OIM Coef.), standard error (Std. Err.), z-score, p-value, and 95% confidence intervals for each model path are shown in each row. The first row shows a significant relationship ($z = 4.477$, $p < 0.001$) between special training and patient satisfaction with healthcare, with a standardised path coefficient of 0.658. This shows that patient satisfaction rises as healthcare providers perceive a need for specific training.

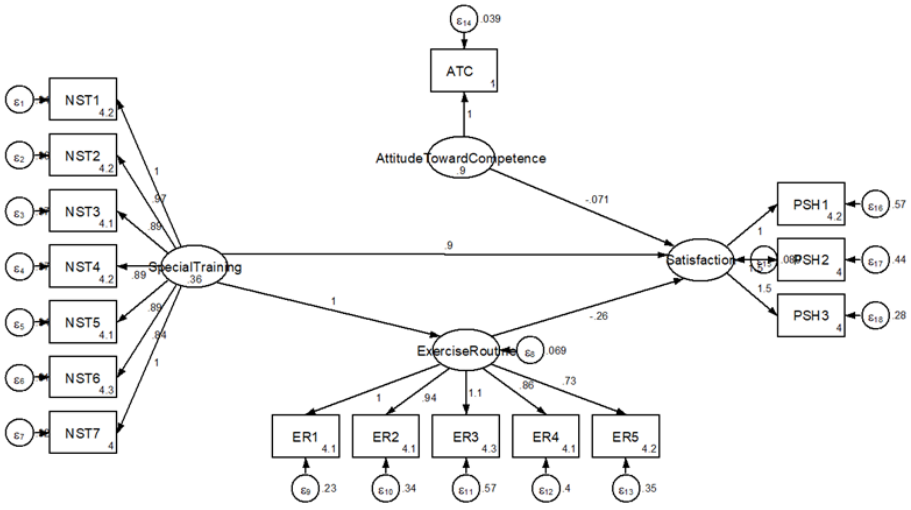

Figure 3: Structural Model for Path Analysis.

A significant positive correlation exists between exercise routine and patient satisfaction with healthcare ($z = 96.550$, $p < 0.001$, standardised path coefficient = 0.906). Regular exercisers are happier with their healthcare. The third row shows that exercise routine mediates the association between special training and patient satisfaction with healthcare. A substantial path coefficient of 0.846 ($z = 12.276$, $p < 0.001$) suggests that patients' adherence to exercise regimens partially mediates the impact of special training on healthcare satisfaction. Finally, the fourth row shows how Attitude towards diabetes patient competence moderates the association between Need for special training and Patient satisfaction with healthcare. A substantial path coefficient (0.580, $z = 3.966$, $p < 0.001$) suggests that positive attitudes towards patient competence increase the influence of special training on patient satisfaction with healthcare.

Table 7: Path Analysis.

	OIM Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Need for special training significantly influences the patient's satisfaction with healthcare.	0.658	0.232	4.477	0.000	0.390	0.521
Exercise routine significantly influences the patient's satisfaction with healthcare.	0.906	0.046	96.550	0.000	0.226	0.722
Exercise routine significantly mediates the relationship of need for special training and patient's satisfaction with healthcare.	0.846	0.078	12.276	0.000	0.223	0.876
Attitude toward diabetic patient competence significantly moderates the relationship of need for special training and patient's satisfaction with healthcare.	0.580	0.143	3.966	0.000	0.301	0.860

Discussion

This study highlights the complexity of diabetic patient satisfaction. As healthcare evolves, provider training, exercise integration, and patient competency attitudes have become crucial to patient outcomes. This study examines how these elements interact to improve care and patient satisfaction. This study illuminates diabetes management processes by examining the direct and indirect interactions between specialised training, exercise routines, and healthcare provider attitudes. The acceptance of all four hypotheses emphasises the importance of a comprehensive, patient-centered approach in improving diabetic patients' healthcare experiences, emphasising the necessity for focused interventions and supportive care. This study confirms the first hypothesis that special training greatly affects patient satisfaction with healthcare. Existing research emphasises the necessity of specialised training in equipping healthcare personnel with diabetes management skills and knowledge. The study indicated that patients were happier with doctors who underwent diabetes management training. This training helps clinicians provide better, more tailored care, provide accurate information, and manage complex diabetic treatment side effects. Specialised training makes patients happier for several reasons. Well-informed healthcare personnel can first simplify medical information for patients, making them more likely to follow their treatment plan.[20] Specialised training prioritises patient-centered treatment, improving provider-patient connections. Patient satisfaction depends on these interactions, which make patients feel appreciated, understood, and supported throughout their healthcare journey. The research also validated the second hypothesis that exercise routines improve patient satisfaction with healthcare. Diabetes care strategies with exercise routines improved patient satisfaction. This supports earlier research showing that regular physical activity improves glucose management, cardiovascular health, and quality of life in diabetics. Research showed that patients had better health outcomes and higher satisfaction with their care when doctors actively pushed and integrated exercise routines into treatment programmes. Exercise improves physical, mental, and emotional wellness, explaining this. Regular exercise empowers patients to self-manage their illness and improves their satisfaction with their doctors. Healthcare providers' promotion of exercise routines shows a holistic approach to diabetes management that values lifestyle changes as much as medical therapies, enhancing patient views of care quality and comprehensiveness.[16]

These findings affect healthcare policy and procedures. First, they emphasise the significance of specialised healthcare practitioner training to promote patient satisfaction. Healthcare institutions should invest in ongoing training on diabetes care advances, communication methods, and patient-centered care. These initiatives will prepare providers to meet the different demands of diabetes patients, improving care. Exercise courses make patients happy, demonstrating the importance of healthcare personnel promoting and prioritising physical activity in diabetes management. Practitioners should learn to create tailored fitness plans, provide continuing support and drive, and address barriers to exercise. Healthcare institutions could consider adding exercise physiologists, physical therapists, and fitness courses to their care teams to keep diabetes patients moving.[29] Healthcare practitioners can enhance diabetes patients' health and happiness by emphasising medical therapy and lifestyle adjustments. The third idea is that an exercise programme greatly affects the relationship between particular training and patient satisfaction with treatment. This idea clarifies how specific training improves patient outcomes. Researchers found that specialised training for healthcare staff improves patient satisfaction, but it depends on activity. This suggests that specially trained healthcare workers can manage diabetes medically and support lifestyle modifications such frequent exercise.[31] Expert training only partially benefits when done correctly, as exercise routines bridge the gap. Professionally trained providers encourage and support exercise, improving patient health and satisfaction. Even more critical is a

comprehensive diabetes management plan that combines medication and lifestyle adjustments.

Multiple factors make exercise useful for mediation. Regular exercise helps diabetics control their blood sugar, lowers their risk of heart disease, and improves their physical and emotional health.[33] These health benefits are more likely when skilled healthcare personnel actively support and help patients perform these tasks, making them satisfied with their care. By helping patients start and maintain exercise routines, skilled caretakers can enhance confidence and action.[18] This will help people stick to their treatment and enjoy it. The study indicated that professional training helps providers overcome fitness issues, set achievable goals, and motivate and support participants. This whole support system enhances patient outcomes and care satisfaction, making patients happier. Acceptance of the fourth hypothesis reveals how perceptions regarding diabetic patients' competence affect the link between specific training and patient satisfaction with healthcare. This highlights how vital professional opinions are to patient care. Specialised training makes patients happy, according to a study. Healthcare providers will support self-management of diabetes if they believe their patients can manage it, making them happier.[11] Liberty, competence, and relatedness drive people to do good on their own, according to Self-Determination Theory.[9] Carers who empower patients to manage their health give them a sense of competence and motivation, which makes them happier and more likely to persist with their treatment.

This moderating effect is demonstrated in how supportive beliefs promote patient-provider relationships. You are more likely to adopt collaborative care strategies like shared decision-making and personalised education when a patient is competent, which makes patients happier. It also encourages teamwork and respect because clinicians are more likely to personalise their care to each patient's needs. The study concluded that well-trained and positive healthcare personnel made patients feel appreciated, understood, and empowered to manage their health. This highlights the importance of medical skill training and patient-centered treatment. The third and fourth hypotheses were accepted, showing how complicated it is for specialised training, fitness regimens, and provider attitudes to effect patient satisfaction with healthcare. Studies demonstrate that exercise and support can mitigate the impacts of specific training. These findings suggest that healthcare systems should provide extensive training programmes that encourage physical activity and a good self-image to make patients happier. To completely treat diabetes, healthcare staff should be rewarded for combining pharmacological therapy with lifestyle adjustments and patient empowerment. This strategy helps healthcare personnel increase patients' health and happiness, which improves diabetes management and quality of life.

All four predictions were correct, proving that specialised training, activity routines, and provider attitudes affect diabetic patient happiness. According to the figures, specialised training makes patients happier directly and via creating effective workout regimens. How much healthcare staff aid patients with their abilities increases patient satisfaction. These findings demonstrate the need of comprehensive training courses that integrate medical knowledge with lifestyle management and foster effective patient-provider interactions. This study highlights how crucial it is to manage diabetes with continual education, lifestyle adjustments, and a working connection between the patient and healthcare providers to enhance health outcomes and patient satisfaction.

In conclusion, this study demonstrates the complex relationships that exist between specialized training, exercise routines, provider attitudes, and patient experiences in diabetes management. The results highlight the necessity of an all-encompassing, patient-focused diabetes care strategy. Additionally, they highlight the impact of patient satisfaction is influenced by healthcare practitioner training, behavior encouragement, and supportive attitudes. This study assesses how these characteristics impact patient outcomes and enhance diabetes therapy using theoretical and practical methodologies. Governments, academic institutions, and healthcare providers must embrace evidence-based solutions that put the needs, preferences, and wellbeing of patients first. Diabetes care that is efficient, easily accessible, and patient-centered in healthcare systems can improve patients' quality of life and health outcomes. Future research and the limitations of this study can help resolve this problem.

Implications of the Study

This study has major implications for diabetic patient satisfaction theory. The study adds to theoretical frameworks by analysing the links between specialised training, fitness routines, provider attitudes, and patient happiness. First, it emphasises the need for a comprehensive diabetes care plan that includes lifestyle changes and patient empowerment. Exercise routines mediate the association between specialised training and patient satisfaction, emphasising the need for healthcare practitioners to incorporate physical activity promotion into diabetes care programmes. The study further emphasises the importance of supportive and empowering patient-provider relationships by showing that provider views about patient competence moderate the link between specialised training and patient satisfaction. These theoretical ideas highlight the complex character of chronic disease patient satisfaction and the necessity for a holistic approach that incorporates medical and psychosocial components of care. The study also emphasises the necessity for integrated and patient-centered diabetic care approaches due to the complex interaction between individual, interpersonal, and organisational aspects on patient experiences and results. This research informs conversations about patient-centered treatment, healthcare provider training, and psychological issues in chronic disease management beyond diabetes care.

This research has major implications for healthcare providers and diabetes care providers. First, the findings emphasise the need of specialised healthcare practitioner

training in improving diabetic patient satisfaction. Healthcare institutions and training programmes should prioritise education and training that equips clinicians with the knowledge, skills, and attitudes needed to offer comprehensive, patient-centered diabetic treatment. The study also emphasises the importance of exercise routines in patient satisfaction, emphasising the need for healthcare providers to promote physical activity in diabetes management strategies. This includes tailoring exercise recommendations, providing resources for patients to exercise, and addressing exercise adherence challenges. The research also emphasises the relevance of supporting physician attitudes towards patient competence, which greatly effect patient satisfaction. Healthcare organisations should engage in provider empathy, communication, and patient-centered care initiatives to improve patient experiences and outcomes. The study also stresses the importance of integrated and collaborative diabetes care that addresses medical and psychosocial components. Interdisciplinary care teams should create personalised treatment plans that prioritise patient choices, goals, and values to empower and satisfy patients.

Limitations and Future Research Directions

Although this research was insightful, numerous limitations should be considered. First, the study uses self-report measures to assess patient satisfaction and healthcare professional attitudes, which may be prone to response biases and social desirability effects. To better understand patient experiences and physician behaviours, future study may include qualitative interviews or observational methodologies. The cross-sectional research approach also makes causal linkages difficult to establish. A longitudinal study is needed to determine how changes in specialised training, exercise routines, and provider attitudes affect diabetic patient satisfaction. Additionally, the study population contains mostly patients from one hospital environment, which may restrict its generalizability. To improve external validity, future study could use a more diverse and representative sample. Finally, while the research model includes essential variables related to diabetes patient satisfaction, socioeconomic status, cultural views, and healthcare system features may potentially affect patient experiences and outcomes. These additional characteristics may affect patient satisfaction and healthcare delivery in future studies.

Based on this analysis, various research opportunities appear. First, the mechanisms linking specialised training, fitness routines, provider attitudes, and patient satisfaction need additional study. Qualitative study could reveal the components of specialised training and provider behaviours that increase patient satisfaction and the barriers and facilitators of diabetic exercise adherence. Comparative studies could also compare patient satisfaction in primary care clinics, specialty diabetic centres, and telemedicine services. Knowing how healthcare delivery models affect patient experiences can help create customised interventions to increase satisfaction and results. Additionally, longitudinal studies are needed to assess how healthcare professional training programmes and policies affect patient satisfaction and quality over time. Long-term effectiveness of provider training and attitude interventions can be assessed by tracking patient experiences and results. Finally, technology in diabetes care and patient satisfaction should be studied. In the digital age, optimising healthcare delivery requires understanding how digital health platforms and telemedicine affect patient experiences and perceptions of care.

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Appendix 1

Exercise Routine

1. Suggest ways you can get exercise.
2. Remind you to exercise.
3. Invite you to join in exercising with them.
4. Congratulate or praise you for exercising regularly.
5. Encourage you to join an organized sports activity.

Need for Special Training

In general, I believe that:

1. Health care professionals who treat people with diabetes should be trained to communicate well with their patients
2. It is important for the nurses and dietitians who teach people to care for their diabetes to learn counseling skills
3. Health care professionals should be required to continue to learn about diabetes because diabetes care is changing fast
4. Health care professionals need to have special training to provide effective treatment of diabetes
5. Nurses and dietitians who have special training in diabetes will give better care to patients
6. Diabetes education for health care professionals should cover diabetes in the elderly
7. To do a good job, diabetes educators should learn a lot about being teachers

Patient Satisfaction with Healthcare

1. Teleconsultation improves my access to specialist care.
2. The overall quality of teleconsultation service is relatively high.
3. Overall, I am entirely satisfied with the teleconsultation service.

Attitude Toward Diabetic Patient Competence

In general, I believe that:

1. People who do not follow their recommended diabetes treatment don't really care about controlling their diabetes
2. Controlling their diabetes should be the most important thing in the lives of people with diabetes
3. The parents of diabetic teenagers should be in charge of how their children take care of their diabetes
4. Decisions about caring for diabetes should be made by the doctor
5. Telling patients about the complications of diabetes will scare them into following their recommended treatment
6. If people with diabetes do not cooperate and follow their recommended treatment there is not much that health care professionals can do for them.