Research

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The perspectives of patients with type 2 diabetes mellitus on marketing mix elements in primary health care: a quantitative study from Lithuania

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Abstract

Background: A competitive advantage in health care institutions can be cultivated by marketing activities and value creation for patients with chronic diseases in primary health care. Type 2 diabetes mellitus (T2DM) is a major challenge in primary health care, as managing risk factors and managing patient knowledge can help to prevent a number of major of complications. This study reveals the expectations and attitudes of patients with T2DM regarding marketing mix elements in the management of their condition. *Aim of the study:* To explore the perspectives of patients with T2DM on marketing mix elements in the primary health care institutions of Lithuania. *Materials and methods:* The design of the national study was based on a survey of patients with T2DM that was conducted after consultation with a family physician in primary health care institutions in Lithuania. The survey was conducted from October 2017 to January 2018, and involved 510 patients with T2DM. Data analysis included factor analysis and linear logistic regression. A hypothetical model was built, defining the relationships between marketing mix elements and both perceived value (emotional, functional, and social) and satisfaction with primary health care services. *Results:* The marketing mix element of 'Service' is statistically significantly dependent on the gender of the respondents, and is expressed more frequently by women ($rcr = 0.118$, $P = 0.007$). The occupation of respondents with T2DM ($rcr = 0.151$, $P = 0.009$) and affiliation to primary health care institution ($rcr = 0.091$, $P = 0.040$) statistically positively affect the marketing mix element of 'Price'. The marketing mix elements of 'Promotion' and 'People' do not statistically significantly depend on the sociodemographic characteristics of the respondents. Only a weak correlation between the sociodemographic characteristics of the respondents and the marketing element of 'Place' was found. The 'Process' element is statistically significantly more relevant to patients with an average monthly income of €350 ($rcr = 0.104$, $P = 0.019$). The element of 'Physical evidence' is more statistically significantly related to respondents with an average monthly income of €350 ($rcr = 0.092$, $P = 0.038$). *Conclusions:* Marketing mix analysis provides information about patients' expectations of primary health care services and identifies areas of improvement for the health services provided by primary health care institutions. The competitiveness of primary health care services is strengthened by enhancing value for patients, by using elements of the health care marketing, and by increasing patient satisfaction.

Introduction

The concept of health care marketing was first introduced in 1977, when the American Hospital Association sponsored the first conference on the subject (Cazacu and Oprescu, 2015). Since Kotler (1979) emphasized the need to use marketing strategies within health care organizations, a great deal of research has been conducted (Lee *et al.*, 2009). Competition for patients is increasing, and hospitals and other providers turned to the familiar field of public relations for their promotional efforts. Communications efforts were beginning to be targeted toward patients, and patient satisfaction research grew in importance. Health marketing mainly concerns improving public health, and it uses marketing research to develop effective methods to inform, educate, and motivate the public (Gunawardane, 2020). Modern health care marketing recognizes that the present health care consumer lives in a digital and experiential economy that significantly affects his/her consumer behavior toward health and health care services (Gunawardane, 2020). The most recent definitions of health care marketing focus on

information exchange between the health care institution and its customers (Gunawardane, 2020). It is important to implement the marketing of health care services accordingly by: managing relationships and building loyalty; considering patient feedback and service recovery; improving health care service quality and productivity; organizing for health care service leadership; and understanding the challenge of building relationships with patients, including preference, liking, and future intentions (Purcarea, 2016). Marketing occupies a position in the field of health promotion that is ensured by marketing principles, strategies, and actions in the context of health: this includes formative research, segmentation, competitive analysis, targeting, positioning, and the marketing mix (Ayed and El Aoud, 2017). Marketing research is required to review theories of health behavior, and to incorporate the empowerment paradigm in order to further develop marketing strategies and programs (Ayed and El Aoud, 2017).

At present, patients have such a variety of options regarding the choice of primary health care service provider that the only way that health care practices can really be distinguished is by establishing well-differentiated, memorable, and unique proposals alongside their marketing strategies (Purcarea, 2019). Acting in a dynamic and unpredictable environment, the health care service provider must be able to detect opportunities in, and threats to, the market in which it operates (Purcarea, 2019). Marketing plays an important role in helping health care professionals to create, communicate, and provide value to their target market, and to attain a high level of patient satisfaction (Purcarea, 2019). The marketing mix elements strategy is necessary in medical organizations to improve the competitive advantage of the primary health care institution, and thus to ensure their success (Purcarea, 2019). For policy makers, having established the priorities of value creation at the primary health care level, it is important to develop collaborative activities by involving health care professionals in improving the quality of life and satisfaction levels of patients.

There is also a growing recognition of the significance of patient involvement and knowledge (Purcarea, 2016), and consumer – patient empowerment. They work to assure voluntary consumer behavior change in health care, and permit the development of knowledge, skills, and competencies, serving both to strengthen dialogue and enhance autonomy (Ayed and El Aoud, 2017). In the marketing literature, health care services are defined as the utility obtained by the consumer as a result of some interconnected activities which are based on a supplier – client relationship, and which are materialized in physical, mental, and social welfare (Muhcina and Popovici, 2015). They are classified based on several criteria, such as the level of health care (primary, secondary, or tertiary assistance), the degree of health care services' difficulty (routine, urgent, or chronic services), the amount of time spent by the patient in the hospital, the compulsory nature of the service, the type of consumer (individual or collective), and the nature of finances (Muhcina and Popovici, 2015). The creation and the delivery of health care services depend on creating and maintaining different types of relationships: internal relationships, relationships with collaborators, relationships with third party payers (insurance companies), and doctor – patient relationships (Cazacu and Oprescu, 2015).

Considering the characteristics of the health care industry, health care services, and consumer behavior – alongside building relationships with patients and other parties – is critical for the success of health care institutions (Cazacu and Oprescu, 2015). One study ($n = 170$) investigated the factors that influence patients' long-term relationships with health care providers at a public regional hospital (Adomah-Afari *et al.*, 2019). This study concluded that health-related factors (their reception by staff, providers' attitudes, waiting time, competence and expertise, and the hospital environment) were statistically significant (Adomah-Afari *et al.*, 2019). The primary factor in patients' decision making is recommendation by the family physician, and e-marketing is important as the internet is the major source of information among younger respondents (Bhangale, 2011).

Patients with T2DM have a significant role in the marketing of primary health care:

- Value is created through patient-oriented services and health care service management. This involves meeting the needs and expectations of patients, increasing their satisfaction with primary health care institutions, providing patients with additional service choices, raising patients' awareness about their own health, and improving communication and collaboration between patients and family physicians.
- T2DM is extremely disturbing and negatively impactful on the quality of life of patients. Marketing helps better communicate to participants of the health care system regarding the disease, risk factors, and complications.
- Globally, T2DM is the most important chronic disease management problem in primary health care, and patients with T2DM are regular users of the services of family physicians. Marketing activities help family physicians to better manage the progress of the chronic disease.
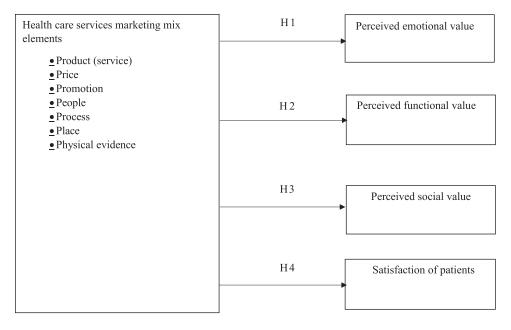
In previous studies, a gap is noted between health care marketing mix elements and their relationships with perceived values and satisfaction from the perspectives of patients of primary health care (Sweeney and Soutar, 2001). This research makes suggestions that relate to health care marketing mix elements and that tie into perceived values and satisfaction from the perspectives of patients with T2DM after family physician consultation at the primary health care level in Lithuania. The items studied were the opinions of respondents with T2DM regarding health care marketing mix elements and the ways in which they relate to perceived value (emotional, functional, and social) and satisfaction. Future health care marketing researchers should seek more meaningful quality improvements, a more population-specific assessment of customer satisfaction (Lim and Ting, 2012), and to identify relationships within marketing mix elements and perceived value. The primary aim of this research is to explore marketing mix elements from the point of view of patients with T2DM after consultation with family physicians at primary health care institutions in Lithuania.

The objectives of the research can be summarized as:

- To develop the hypotheses model with regards to health care marketing mix elements and perceived value dimensions, with a view towards satisfaction from the point of view of respondents with T2DM at the primary health care level.
- To determine the main decisions related to health care marketing mix elements with the perspectives of respondents with T2DM at the primary health care level in mind.
- To investigate the main associations of health care marketing mix elements with the perceived values of patients with T2DM and their satisfaction with primary health care services.

Development of hypothetical model for the study

The functions of the marketing of health care services are knowledge management, customer relationship management, brand

Figure 1. The hypotheses model of health care services marketing mix elements, alongside perceived value and satisfaction.
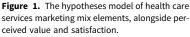
image building, and internal marketing (Bhangale, 2011). Organizations are increasingly focusing on building their marketing capabilities to gain a competitive advantage over their rivals (Moorman and Day, 2016). The traditional foundation for all marketing plans is the consideration of four key elements: product (what the offering actually is and what its characteristics are), price (what the company should charge for the product in its various iterations), place (where the product is sold and the distribution channels), and promotion (advertising, public relations, sales representatives). The element of 'principles' become the fifth 'P' of health care marketing, and principles represent the means through which companies protect their reputation (Gray, 2008). The value of an organization to customers is created through 7 Ps elements of the marketing mix that include product, price, place, promotion, people, physical evidence, and process (Kotler *et al.*, 2008). During the literature analysis it was found that the 4 'S' model (size, shape, share, soar) that was used in health care institutions was perceived to add significant value for entry level marketing professionals in the health care sector (Biranchi, 2020). Emotional value is the utility derived from the feelings or affective states that a product generates (Sweeney and Soutar, 2001). Social value is the utility derived from a product's ability to enhance social self-concept (Sweeney and Soutar, 2001). Functional value (price/value for money) is the utility derived from the product due to the reduction of its perceived short-term and long-term costs (Sweeney and Soutar, 2001). Functional value (performance/quality) is the utility derived from the perceived quality and expected performance of the product (Sweeney and Soutar, 2001). The results of patient satisfaction surveys allow primary health care institutions to identify service factors that need improvement (Batbaatar *et al.*, 2017).

The hypothetical model was built because during the analysis of other studies, it is conspicuously absent. This model constructed on the basis of separate relationships between constructs that require further testing. The primary assertion of our hypothesis is that the marketing mix elements of health care services statistically, directly, and positively relate to the perceived emotional, functional, and social value of patients with T2DM and their satisfaction with primary health care services. The results of the

survey established the statistically significant positive influence of both social value and functional value on satisfaction. Conversely, emotional value was shown to decrease the satisfaction of patients with T2DM (Budrevičiūtė *et al.*, 2019). During the theoretical discussion, the hypothesis model of research was built (Figure 1).

In our study, the seven key elements (service, price, promotion, people, process, place, and physical evidence) of health care marketing were investigated. Therefore, the hypotheses to be investigated were as follows:

H1: The marketing mix elements statistically, positively, and directly related to the perceived emotional value of patients with T2DM.
H2: The marketing mix elements statistically, positively, and directly related to the perceived functional value of patients with T2DM.
H3: The marketing mix elements statistically, positively, and directly related to the perceived social value of patients with T2DM.
H4: The marketing mix elements statistically, positively, and directly related to the satisfaction of patients with T2DM.

Material and methods

Research design

Before this study commenced, the Kaunas Regional Biomedical Research Ethics Committee issued permit No. BE-2-11, 2014 05 07, and the State Data Protection Inspectorate issued the preliminary data verification – permit No. 2R-5964, 2014 11 19. The design of this study was based on the survey of patients with T2DM after they had received a family physician's services in primary health care institutions in Lithuania (Figure 2).

The survey was conducted from October 2017 to January 2018. A questionnaire was used, which was developed following a methodological process based on three information sources that included a review of the scientific literature, consultations with researchers, the results of focus group discussions, and the survey
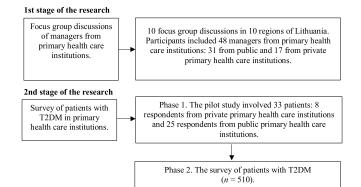
Figure 2. The research design.

of patients with T2DM after family physician consultation. The authors conducted a review of the scientific literature in the EBSCO and EMERALD databases and, based on the criteria, they selected 10 qualitative studies, 20 quantitative studies, 3 mixed research papers, and 10 scientific literature reviews.

Study population

National focus group discussions were conducted from May 2015 to March 2016 in the 10 counties of Lithuania. A total of 48 participants were enrolled into the qualitative study: 31 managers of public primary health care institutions and 17 managers of private primary health care institutions. The mean size of the focus group was five participants. The mean duration of the focus group discussion was 1.21 h. Participants were selected from the list composed by the Lithuanian Institute of Hygiene at the end of 2012. Selection was made following the principle of 50/50, with the intention to include the managers of both public and private primary health care institutions. A pilot study was conducted in May 2017 in Lithuania to evaluate the suitability of the questionnaire. In this pilot study, the managers of the primary health care institution were informed about the pilot study by phone and/or by email. Informed consent forms and questionnaires were then distributed to managers or heads of departments, or family physicians working in primary health care institution. The questionnaires were filled out by patients with T2DM after a consultation with a family physician. The pilot study involved 33 patients with T2DM from both private primary health care institution (eight respondents) and public primary health care institution (25 respondents). In total, 80 questionnaires were distributed, and 33 questionnaires were completed (a response rate of 41%). The reliability of the questionnaire as evaluated by the Cronbach α test was 0.920. Taking into account the respondents' opinion, the questions on the questionnaire were then corrected and developed. From October 2017 to January 2018, the main survey was conducted and data was collected using the questionnaire given to patients with T2DM in private and public primary health care institutions in Lithuania. The inclusion criteria for this study were as follows: an age of ≥ 18 years, a diagnosis of T2DM, a treatment consisting of diet, physical activities, oral hypoglycemic agents, insulin, or any combination thereof. Those diagnosed with type 1 and gestational diabetes were excluded, because the goal of our research was to investigate the opinion and perspectives of patients with T2DM. All who met the inclusion criteria were invited to participate. The T2DM diagnosis was defined by family physician using the medical records. In total, 700 respondents were

approached to take part in the survey, and 510 valid questionnaires (258 from public and 252 from private primary health care institutions in Lithuania) were collected, resulting in a response rate of 72.8%. Information regarding non-respondents is omitted from this study.

Study instrument

The questionnaire was created based on question groups that were divided into the variables of emotional value, functional value, social value, satisfaction, costs, behavioral intentions, and marketing mix elements. Table 1 (in the Annex) demonstrates factor analysis according to marketing mix elements, where 'Service' was comprised of 10 items, 'Price' 3 items, 'Promotion' 5 items, 'People' 5 items, 'Process' 6 items, 'Place' 4 items, and 'Physical evidence' 4 items. In questionnaire 6, the group of questions were arranged based on the Likert scale, where 13 questions were categorical and 8 questions were open (respondents added their response). Socio-demographic questions involved the gender of respondents, age of respondents, their place of residence, income, education, and occupation. In the questionnaire, respondents could choose their place of residence (urban or rural) based on the confirmed number of citizens living in that place. The question about income of respondents was categorical and divided responses into categories: less than €350 and more than €350. The low income was considered as less than €350. In the case of establishing how family physicians communicate with doctors/endocrinologists, we asked respondents about their frequency of visits to endocrinologists. In total, 35.7% of respondents mentioned that they visited a doctor/endocrinologist once per year.

Primary health care in Lithuania

Before health care reform in Lithuania, provision of the services provided by specialist doctors predominated. In 1991, the Supreme Council of the Republic of Lithuania approved the National Health care Concept, which aimed to restructure health care services and to focus on primary health care and the primary health care institution (Resolution No. I-1939 of the Supreme Council of the Republic of Lithuania on the Lithuanian National Health Concept and its Implementation, 30 October 1991). The main objectives of the first phase (2003–2005) were to improve health care quality, improve accessibility to services, and optimize the scope and structure of health care needs (Resolution No. 335 of the Government of the Republic of Lithuania on the Approval of the Restructuring Strategy of the Health Care Institutions, 18 April 2003). The second phase (2006–2008) of the restructuring of the health care system involved the separation of primary and secondary level outpatient services, with an emphasis on primary health care institutions in rural areas and the development of the network of private primary health care institutions (Resolution No. 1020 of the Government of the Republic of Lithuania on the Approval of the 2006–2008 Program Implementation of the Government of the Republic of Lithuania, 17 October 2006). The third stage (2009–2011) of the restructuring of health care institutions aimed to provide safe, high-quality, and accessible health care services to the population, whilst ensuring the efficient use of health care resources (Resolution No. 1654 of the Government of the Republic of Lithuania on the Approval of the Third Phase Program of Restructuring of Health Care Institutions and Services, 7 December 2009). The fourth phase (2012–2016) of health care system development and hospital network consolidation involved the development of the main outpatient services, particularly the

Table 1. Marketing mix elements' factors, attributes, and codes

Factor	Attribute	Code
Service	My expectations are fulfilled with my family physician's work	RPA1
	My expectations are fulfilled with my nurse's work	RPA2
	My expectations are fulfilled with reception employees' work	RPA3
	I get information about prevention programs at my health care institution	RPA4
	I feel positive when I have to visit my health care institution	RPA5
	Family physician consultations provide me with more information about health promotion	RPA6
	I am satisfied with my family physician's work	RPA7
	I am satisfied with my nurse's work	RPA8
	I am satisfied with the reception employees' work	RPA9
	I am satisfied with the treatment of diabetes at this health care institution	RPA10
Price	The cost of visiting the family physician justifies the consultation	RKA1
	My expenses for the medications that are prescribed by the family physician live up to my expectations	RKA2
	My expenses for the medical products (i.e., nursing products) live up to my expectations	RKA3
Promotion	I would recommend my health care institution	RRE1
	I will work harder to follow my family physician's recommendations on how to promote health	RRE2
	I would recommend my health care institution to relatives and friends	RRE3
	I would recommend my family physician to relatives and friends	RRE4
	If I had to choose a health care institution, I would choose the same primary health care institution	RRE5
People	I am satisfied with the level of communication I have with my family physician	RZM1
	I am satisfied with the level of communication I have with my nurse	RZM2
	I chose this primary health care institution because there is an experienced family physician working there	RZM3
	I trust my family physician	RZM4
	I will visit the same family physician	RZM5
Process	The primary health care institution's working hours are in line with my expectations	RPR1
	The consultation duration of my family physician fulfills my expectations	RPR2
	I will try to work more closely with my family physician	RPR3
	I will try to work more closely with my nurse	RPR4
	I prepare my questions about health for my family physician in advance	RPR5
	I openly discuss with my family physician who helps me to choose the best treatment available	RPR6
Place	Relatives advised me to choose this primary health care institution	RVI1
	I chose this primary health care institution because it has an experienced family physician	RVI2
	I chose this primary health care institution because I have no alternative	RVI3
	I chose this primary health care institution because it is close to my home	RVI4
Physical evidence	The cleanliness and order maintained at the primary health care institution live up to my expectations	RFI1
	Laboratory tests at my primary health care institution live up to my expectations	RFI2
	I get information about health prevention programs at my primary health care institution	RFI3
	I prepare my questions about health to my family physician in advance	RFI4

strengthening of primary health care and disease prevention (Resolution No. 1290 of the Government of the Republic of Lithuania on the Approval of the Fourth Stage Plan of the Development of the Health Care System and the Consolidation of the Hospital Network, 9 December 2015). Increasing competition among primary health care institutions gives patients the freedom to choose a health care institution and a family physician. Meeting the patients' expectations with health care services, primary health care human resources, and patients' communication are the main priorities in the management of primary health care institutions.

Table 2. Demographics of the study population

Variables	*n*	%
Gender		
Female	348	68.2
Male	162	31.8
Residence		
Urban	406	79.6
Rural	104	20.4
Income		
Less than €350	313	61.4
More than €350	197	38.6
Frequency of visits to an endocrinologist		
Never	42	8.2
Once in three months	83	16.3
Once in six months	101	19.8
Once in 12 months	182	35.7
Once in 24 months	51	10.0
Less than once in 24 months	51	10.0

Statistical analysis

Statistical analysis was done with IBM SPSS Statistics 25. The construct validity of the questionnaire was tested with exploratory factor analysis, and the reliability of the questionnaire was tested using Cronbach α. The scores of the factor analysis were analyzed as estimates of the emotional, social, functional, and satisfaction values, marketing mix elements. The Spearman rank correlation coefficient (r_s) was used to analyze the linear relationship between factor scores and quantitative features. Linear regression analysis was used for modeling the relationship between the satisfaction of respondents and their emotional, social, and functional values. For the analysis of the relationship between factor scores and qualitative features, factor scores were grouped into two groups: weakly (those with a factor score of less than or equal to zero) and strongly (those with a factor score larger than zero) expressed emotional, social, functional, and satisfaction values. Cramer's coefficient (*rcr*) and the Chi square test for independence were used to analyze the relationships between qualitative features. These associations were considered as statistically significant if a *P*-value < 0.05 was encountered.

Results

Among 510 respondents, 348 (68.2%) were women and 162 (31.8%) were men. As many as 77.9% and 83.3% of the women and men, respectively, indicated that they lived in urban areas. The mean age of the participants was 64.58 years (*Standard deviation (SD)* = 11.49), and those aged from 55 to 65 years accounted for the largest proportion of the patients with T2DM (32.00%). The mean age of the women that took part was 64.10 years (*SD* = 11.56), whilst for men it was 65.63 years (*SD* = 11.29). Table 2 shows the demographics of the study population.

The scale of internal consistency was examined using Cronbach α, and each construct fell within the expected range. Each factor

Table 3. Factor analysis construction

Factor	Items number	Cronbach α	KMO
Service	10	0.92	0.86
Price	3	0.78	0.67
Promotion	5	0.91	0.82
People	5	0.83	0.79
Process	6	0.88	0.86
Place	4	0.58	0.56
Physical evidence	4	0.80	0.75

name is based on the variables with significant loadings (Cronbach α, Kaiser–Meyer–Olkin measure [KMO]) (Table 3).

The marketing elements of 'Service' and 'Process' have the highest KMO when compared with other elements of the marketing mix. The element of 'Place' has the lowest KMO, and it is therefore considered not to involve this element in the following analysis. The factor analysis and Cronbach α analysis are shown in Table 4.

According to factor analysis, the biggest influence in the marketing mix element 'Service' is exerted by the responses 'I am satisfied with my family physician's work' (weight 0.85), 'My expectations with my family physician's work are fulfilled' (weight 0.84), 'I am satisfied with my nurse's work' (weight 0.83), and 'I am satisfied with the treatment of diabetes at primary health care institution' (weight 0.83). The least influential statements are those where respondents felt positive when attending the primary health care institution (weight 0.58), and where the services provided by the family physician improve understanding about health (weight 0.66). The marketing mix element 'Service' has a statistically positive dependence on the gender of respondents with T2DM (*rcr* = 0.12, *P* = 0.007; Table 5).

Based on the results of factor analysis, the biggest influence in the marketing mix element 'Price' is exerted by the statements 'My expenses for the medications that are prescribed by the family physician live up to my expectations' (weight 0.88) and 'The cost of visiting the family physician justifies the consultation' (weight 0.8). A statistically significant association was found between primary health care institution ownership (private or public) and the marketing mix element 'Price' (*rcr* = 0.091, *P* = 0.040; Table 5). The occupation of respondents with T2DM (*rcr* = 0.151, *P* = 0.009) and affiliation to primary health care institution (*rcr* = 0.091, *P* = 0.040) statistically positively affect the marketing mix element 'Price'. In the marketing mix element of 'Promotion', the statements with the biggest influence are 'I would recommend my family physician to relatives and friends' (weight 0.90), 'I would recommend my health care institution to relatives and friends' (weight 0.88), and 'If I had to choose a health care facility, I would choose the same primary health care institution' (weight 0.84). The least influential statements were 'I would recommend my primary health care institution' (weight 0.83) and 'I will work harder to follow the family physician's recommendations on how to promote health' (weight 0.82). Statistical relationships were not identified between the marketing mix element 'Promotion' and the sociodemographic characteristics of respondents with T2DM (Table 5). In the marketing mix element 'People', the most significant opinion of respondents are related to trust in the family physician (weight 0.90) and respondent's welcome communication with a family physician (weight 0.88) and nurse (weight 0.86). The least

Table 4. The results of exploratory factor analysis of the marketing mix elements

Factor name	Code	Loadings	Variance explained	Corrected item, total correlation	α if deleted
Service	RPA1	0.84	60.1	0.79	0.91
	RPA2	0.82		0.75	0.91
	RPA3	0.73		0.67	0.91
	RPA4	0.75		0.70	0.91
	RPA5	0.58		0.52	0.93
	RPA6	0.66		0.59	0.92
	RPA7	0.85		0.79	0.91
	RPA8	0.83		0.76	0.91
	RPA9	0.81		0.75	0.91
	RPA10	0.83		0.78	0.91
Price	RKA1	0.82	69.97	0.59	0.74
	RKA2	0.88		0.70	0.61
	RKA3	0.80		0.58	0.76
Promotion	PRE1	0.83	73.15	0.73	0.90
	PRE2	0.82		0.72	0.90
	PRE3	0.88		0.81	0.90
	PRE4	0.90		0.84	0.87
	PRE5	0.84		0.75	0.89
People	RZM1	0.88	65.53	0.76	0.76
	RZM2	0.86		0.72	0.77
	RZM3	0.56		0.43	0.89
	RZM4	0.90		0.77	0.76
	RZM5	0.80		0.65	0.80
Process	RPR1	0.72	64.63	0.60	0.87
	RPR2	0.67		0.56	0.88
	RPR3	0.90		0.82	0.84
	RPR4	0.92		0.85	0.83
	RPR5	0.77		0.67	0.86
	RPR6	0.80		0.69	0.86
Place	RVI1	0.78	44.09	0.26	0.41
	RVI2	0.59		0.13	0.55
	RVI3	0.74		0.22	0.43
	RVI4	0.51		0.08	0.58
Physical evidence	RFI1	0.90	65.64	0.67	0.69
	RFI2	0.90		0.69	0.69
	RFI3	0.84		0.50	0.72
	RFI4	0.55		0.16	0.87

influential statements involved respondents' decisions to visit the same family physician (weight 0.80) and their choice of primary health care institution due to having an experienced family physician (weight 0.56). We detected no statistically significant relationships between the marketing mix element 'People' and respondents with T2DM's sociodemographic characteristics (Table 5). The most important statements in the marketing mix element 'Process' indicate that respondents would like to more partnership with nurse (weight 0.92) and their family physician (weight 0.90). In the opinions of respondents with T2DM, they prefer to openly discuss the best course of treatment with their family physician (weight 0.80). The least influence was exerted by the statements 'I prepare my questions about health for my family physician in advance' (weight 0.77), 'The primary health care institution's working hours are in line with my expectations' (weight 0.72), and 'The times of my family physician's service fulfills my expectations' (weight 0.67). It was found that the marketing mix element 'Process' had a statistically significant relationship to the income of patients with T2DM ($rcr = 0.104$, $P = 0.019$; Table 5). The marketing mix element 'Physical evidence' is important for respondents with T2DM because the cleanliness and maintained order at the primary health care institution live up to their expectations (weight 0.90) and the tests of laboratories fulfills their expectations (weight 0.90). The least important statements were 'I get information about preventive programs at the primary health care institution' (weight 0.84) and 'I prepare the questions about health to my family physician in advance' (weight 0.55). The marketing mix element 'Physical evidence' was found to be statistically significant in relation to the income of respondents with T2DM ($rcr = 0.092$, $P = 0.038$; Table 5).

Results of linear regression analysis confirmed hypothesis H4 in that the marketing mix elements of 'Price', 'Promotion', and 'Place' are positively, statistically significantly related to respondents with T2DM's perceived emotional value (Table 6).

There was no evidence of a statistically significant effect of the marketing mix elements such 'Service', 'People', 'Process', and 'Physical evidence' on the perceived emotional value of respondents with T2DM. The marketing mix elements of 'Service', 'Promotion', 'Process', 'Physical evidence', and 'Place' have positive and statistically significant links to the perceived functional values of patients with T2DM (Table 6). The marketing mix elements of 'Promotion' and 'Process' statistically significantly decrease in the perceived functional values of patients with T2DM. Results of linear regression analysis confirmed hypothesis H6 which stated that the marketing mix elements of 'Service', 'Price', 'People', and 'Process' positively and statistically significantly related to the perceived social value of patients with T2DM (Table 6). The analysis data showed that perceived social value is decreased by the marketing mix elements 'Place', 'Promotion', and 'Physical evidence', but the decrease is not statistically significant. The satisfaction of respondents with T2DM is decreased by the marketing mix elements of 'Price', 'Place', and 'Physical evidence', where the elements of 'Service', 'Promotion', 'People', and 'Process' increase the satisfaction of patients with T2DM (Table 6).

Discussion

T2DM is reported to affect 1 in 11 adults worldwide, with over 80% of T2DM patients residing in low-to-middle-income countries (Ong *et al.*, 2018). As primary health care institutions are often close to the places where people live and work, they represent the first point of contact for individuals, families, and communities and play an integral role in responding to the increasing global prevalence of this disease (Albuquerque *et al.*, 2014; Ong *et al.*, 2018). Diabetes as a social problem demands a reorientation of health care professionals and health care settings, as well as the

Table 5. The perception of marketing mix elements according to sociodemographic characteristics

Characteristics	Marketing mix element 'Service'				Marketing mix element 'Price'				Marketing mix element 'Promotion'				Marketing mix element 'People'				Marketing mix element 'Process'				Marketing mix element 'Physical evidence'			
	Weakly expressed, n (%)	Strongly expressed, n (%)	Cramer's coefficient, r_{cr}	*p-value	Weakly expressed, n (%)	Strongly expressed, n (%)	Cramer's coefficient, r_{cr}	*p-value	Weakly expressed, n (%)	Strongly expressed, n (%)	Cramer's coefficient, r_{cr}	*p-value	Weakly expressed, n (%)	Strongly expressed, n (%)	Cramer's coefficient, r_{cr}	*p-value	Weakly expressed, n (%)	Strongly expressed, n (%)	Cramer's coefficient, r_{cr}	*p-value	Weakly expressed, n (%)	Strongly expressed, n (%)	Cramer's coefficient, r_{cr}	*p-value
Gender																								
Female	132 (76.3)	218 (64.7)	0.118	0.007	145 (72.1)	205 (66.3)	0.061	0.168	119 (73.9)	231 (66.2)	0.077	0.081	105 (67.7)	245 (69)	0.013	0.776	120 (73.6)	230 (66.3)	0.074	0.096	135 (71.4)	215 (67)	0.046	0.296
Male	41 (32.7)	119 (35.3)			56 (27.9)	104 (33.7)			42 (26.1)	118 (33.8)			50 (32.3)	110 (31)			43 (26.4)	117 (33.7)			54 (28.6)	106 (33)		
Residence																								
Urban	142 (82.1)	264 (78.3)	0.044	0.321	161 (80.1)	245 (79.3)	0.01	0.824	125 (77.6)	281 (80.5)	0.033	0.454	124 (80)	282 (79.4)	0.006	0.885	124 (76.1)	282 (81.3)	0.06	0.175	148 (78.3)	258 (80.4)	0.025	0.576
Rural	31 (17.9)	73 (21.7)			40 (19.9)	64 (20.7)			36 (22.4)	68 (19.5)			31 (20)	73 (20.6)			39 (23.9)	65 (18.7)			41 (21.7)	63 (19.6)		
Income																								
≤ €350	97 (56.1)	216 (64.1)	0.078	0.078	124 (61.7)	189 (61.2)	0.005	0.905	90 (55.9)	223 (63.9)	0.076	0.085	88 (56.8)	225 (63.4)	0.062	0.159	88 (54)	225 (64.8)	0.104	0.019	105 (55.6)	208 (64.8)	0.092	0.038
> €350	76 (43.9)	121 (35.9)			77 (38.3)	120 (38.8)			71 (44.1)	126 (36.1)			67 (43.2)	130 (36.6)			75 (46)	122 (35.2)			84 (44.4)	113 (35.2)		
Education																								
Primary	30 (17.3)	61 (18.1)	0.086	0.283	31 (15.4)	60 (19.4)	0.11	0.102	20 (12.4)	71 (20.3)	0.099	0.171	23 (14.8)	68 (19.2)	0.058	0.629	25 (15.3)	66 (19)	0.103	0.146	31 (16.4)	60 (18.7)	0.03	0.926
Secondary	64 (37)	140 (41.5)			74 (36.8)	130 (42.1)			71 (44.1)	133 (38.1)			62 (40)	142 (40)			60 (36.8)	144 (41.5)			77 (40.7)	127 (39.6)		
Higher education (college)	48 (27.7)	68 (20.2)			47 (23.4)	69 (22.3)			37 (23)	79 (22.6)			39 (25.2)	77 (21.7)			47 (28.8)	69 (19.9)			43 (22.8)	73 (22.7)		
Higher education (university)	31 (17.9)	68 (20.2)			49 (24.4)	50 (16.2)			33 (20.5)	66 (18.9)			31 (20)	68 (19.2)			31 (19)	68 (19.6)			38 (20.1)	61 (19.0)		
Affiliation to primary health care institution																								
Private	84 (48.6)	168 (49.9)	0.012	0.782	88 (43.8)	164 (53.1)	0.091	0.04	73 (45.3)	179 (51.3)	0.055	0.212	76 (49)	176 (49.6)	0.005	0.91	76 (46.6)	176 (50.7)	0.038	0.388	92 (48.7)	160 (49.8)	0.011	0.799
Public	89 (51.4)	169 (50.1)			113 (56.2)	145 (46.9)			88 (54.7)	170 (48.7)			79 (51)	179 (50.4)			87 (53.4)	171 (49.3)			97 (51.3)	161 (50.2)		
Occupation																								
Retired	59 (34.1)	124 (36.8)	0.113	0.09	74 (36.8)	109 (35.3)	0.151	0.009	56 (34.8)	127 (36.4)	0.083	0.323	57 (36.8)	126 (35.5)	0.119	0.064	51 (31.3)	132 (38)	0.085	0.293	67 (35.4)	116 (36.1)	0.091	0.243
Physical work	41 (23.7)	106 (31.5)			46 (22.9)	101 (32.7)			40 (24.8)	107 (30.7)			34 (21.9)	113 (31.8)			46 (28.2)	101 (29.1)			46 (24.3)	101 (31.5)		
Nonphysical work	65 (37.6)	98 (29.1)			69 (34.3)	94 (30.4)			60 (37.3)	103 (29.3)			60 (38.7)	103 (29)			61 (37.4)	102 (29.4)			49 (36.5)	94 (29.3)		
Other (stay-at-home parent, unemployed)	8 (4.6)	9 (2.7)			12 (6)	5 (1.6)			5 (3.1)	12 (3.4)			4 (2.6)	13 (3.7)			5 (3.1)	12 (3.5)			7 (3.7)	10 (3.1)		

*Pearson chi square test for independence, data are given as n (%).

Table 6. Linear regression model for values and satisfaction on marketing mix elements

Attributes	Regression coefficient of marketing mix elements on emotional value	p-value	95% confidence interval of regression coefficients		Coefficient of determination R²	Regression coefficient of marketing mix elements on functional value	p-value	95% confidence interval of regression coefficients		Coefficient of determination R²	Regression coefficient of marketing mix elements on social value	p-value	95% confidence interval of regression coefficients		Coefficient of determination R²	Regression coefficient of marketing mix elements on satisfaction	p-value	95% confidence interval of regression coefficients		Coefficient of determination R²
Service	−0.22	0.06	−0.45	0.57	0.232	0.57	<0.001	0.51	0.64	0.94	0.16	<0.001	0.05	0.26	0.845	0.88	<0.001	0.80	0.96	0.903
Price	0.13	0.01	0.04	−0.01		−0.01	0.67	−0.03	0.02		0.09	<0.001	0.04	0.13		−0.08	<0.001	−0.11	−0.04	
Promotion	0.18	0.04	0.01	−0.06		−0.06	0.01	−0.11	−0.01		−0.06	0.11	−0.14	0.01		0.20	0.002	0.04	0.16	
People	0.15	0.12	−0.04	−0.04		−0.04	0.17	−0.09	0.02		0.72	<0.001	0.63	0.81		0.14	<0.001	0.07	0.21	
Process	0.06	0.57	−0.14	−0.21		−0.21	<0.001	−0.26	−0.16		0.11	0.02	0.02	0.19		0.17	<0.001	0.10	0.24	
Place	0.28	<0.001	0.20	0.02		0.02	0.06	0.00	0.05		−0.04	0.06	−0.07	0.00		−0.05	0.002	−0.08	−0.02	
Physical evidence	0.02	0.80	−0.14	0.68		0.68	<0.001	0.64	0.72		−0.02	0.57	−0.09	0.05		−0.28	<0.001	−0.34	−0.22	

behavior of patients with T2DM (Sørensen *et al.*, 2015; Rosiek *et al.*, 2016). Lim (2020) affirms the marketing mix, noting that it encourages the desired behaviors in patients and facilitates their participation in health care by controlling a combination of the mix elements. In this study, the perspectives of patients with T2DM on marketing mix elements in the primary health care institutions of Lithuania were explored. The hypothesis model was developed and tested. We determined the main perspectives related to health care marketing mix elements with the perspectives of respondents with T2DM at the primary health care level in mind. The main associations of health care marketing mix elements with the emotional, social, and functional dimensions of perceived value and satisfaction of patients with T2DM were investigated. Our study focusing on patients' perceived value is in line with the statement of Hirpa *et al.* (2020) that the modern health care system is moving towards patient-centered and value-based care models that prioritize health outcomes that matter to patients. However, the concept of perceived value is well known in diverse branches of the service industry, while knowledge of it in health care remains fragmented (Pevec and Pisnik, 2018). Consumer perceived value refers to consumers' overall assessment of service utility based on benefits and sacrifices. The benefits in health care are primarily the outcomes of good service quality (i.e., satisfaction), and the sacrifices include both the monetary and nonmonetary costs (i.e., time spent, or mental and physical stress) (Chahal and Kumari, 2011). Besides the concept of cost benefit analysis, customer perceived value is also defined as a multidimensional concept. In our study, we have concentrated on Sanchez *et al.*'s (2006) approach, which states that customer perceived value is a combination of three dimensions: functional value, social value, and emotional value. The ability of health care providers to operate in a highly competitive market supposes that they have to perfectly understand the needs of patients and, based on this knowledge, deliver true customer value. To do so, health care providers should effectively use their resources to maximize the perceived value of their services to target customers (Gates *et al.*, 2000). Perceived value is subjective and varies based on the socio-demographic attributes of an individual. The results of our study reveal that the influence of the marketing mix elements on the dimensions of perceived value and patient satisfaction diverges from the socio-demographic characteristics of respondents. 'Service' as a marketing mix element is strongly expressed by gender (female), 'Price' by ownership (private primary health care institutions) and occupation (retired), and 'Process' and 'Physical evidence' by income (€350). The marketing mix elements of 'People' and 'Promotion' have no statistically significant relationships with the socio-demographic characteristics of the patients with T2DM involved in this study. Alongside patient perceived value, we measured how patient satisfaction is affected by marketing mix elements. Patient satisfaction is a criterion that informs whether the health care provider is successful at meeting the expectations of most relevance to the patient, and is a key determinant of the patient's prospective behavioral intention (Xesfingi and Vozikis, 2016). The findings of our study indicate that a positive influence on patient satisfaction is exerted by the marketing mix elements of 'Service', 'Promotion', 'People', and 'Process', and that a negative influence is exerted by 'Price', 'Place', and 'Physical evidence.'

Marketing is becoming increasingly important for health care institutions because competition in the health care market is ever-growing, and the pursuit of a competitive advantage in creating value for patients through marketing activities is at the heart

of a company's strategy (Elrod and Fortenberry, 2018). Despite this, studies that concern marketing and which focus particularly on the link between marketing mix elements and patient perceived value dimensions remain scarce. Perhaps surprisingly, there is more marketing research carried out in hospitals than in the primary care sector. The major exception to this is the inquiry carried out by Račienė and Bučiūnienė (2006) in Lithuania. The findings of their quantitative study ($n = 410$) show that the marketing mix elements of 'People' and 'Process' play the most crucial role in the activities of primary health care institutions. Nonetheless, we were not able to locate studies aimed at how marketing mix elements as a set of tools may be used in seeking to offer better services to patients with T2DM. The research findings of Abedi and Abedini (2017) unravel the importance of two marketing mix elements – 'Price' and 'Product.' The first of these elements is actualized in public hospitals and the latter in private hospitals. A similar result was attained by Nasiripour *et al.* (2013), wherein the researchers identified that the biggest influence on the activities of public hospitals was exerted by two marketing mix elements – 'Place' and 'Price.' Amriza (2017) found that the marketing mix factors in the 'Product' variable have a dominant influence on the interest of patients in re-visiting national health insurance polyclinics. Zarchi *et al.* (2013) disclosed how elements of the marketing mix are employed in developing medical tourism. Despite the growing amount of research into health care through the lens of marketing, the question of why health care as the world's largest service industry is so slow to acknowledge and much less embrace the importance of marketing remains open. Marketing is widely recognized as the essence of management (Webster, 2009), and thus using marketing in the health care sector can help to identify the health needs of society and to increase both the market share of health care institutions and their operational effectiveness (Abedi and Abedini, 2017). Nitin *et al.* (2016) point out that the marketing perspective in health care should gain more attention from both academics and practitioners. We support this approach, and affirm that Lithuanian primary health care institutions should have a deeper understanding of the role of marketing in serving groups patients, including those with T2DM.

Limitations and future research directions

A quantitative study focused on patients with T2DM in Lithuania who were asked for their opinions after using a family physician service. The strength of this study was that it examined the relationships between elements of the marketing complex and the perceived values and satisfaction of patients with T2DM in primary health care. The relationships between marketing mix elements and both the perceived value (social, functional, and emotional) and satisfaction of respondents is the basis for developing and implementing chronic noncommunicable disease intervention programs, and projects that can help manage disease outcomes and increase patient satisfaction with the delivery of health care services. We have no information about non-respondents of the study. The weakness of this study is that the methodology only used two databases of scientific publications. We did not perform a systematic review, and as such may have misses some information on the instrument and the building of the hypothesis. In future, it would be valuable to research opinions regarding marketing mix elements supplied by patients with other chronic noncommunicable diseases at the primary health care level, and to find similarities and differences with this study. The results of

thisstudy can be applied both theoretically and practically to the management of chronic noncommunicable diseases at the primary health care level.

Practical implications

Suggested practical recommendations for improving value creation management and discovering competitive opportunities at the level of primary health care institution include:

- The implementation of marketing principles in a primary health care institution is an important area of service management. It is recommended that health marketing programs should be designed and implemented to increase patient satisfaction and the institution's competitive advantage. Health marketing programs could be developed by marketing professionals who have completed health management studies.

Suggested practical recommendations for improving value creation management and discovering competitive opportunities at the level of the family physician:

- The largest asset of a primary health care institution is its human capital, therefore increasing employees' motivation, improving their qualifications, and managing new competences represent the main opportunities for giving an institution a competitive advantage. Primary health care institutions should strengthen emotional intelligence management activities, as well as good staff recruitment, attraction, and retention practices.
- The emotional value perceived by patients with T2DM lowers their satisfaction with the provided health care services, therefore it is recommended that a specialist lifestyle medicine position be introduced to the primary health care institution to ensure smooth patient lifestyle adjustments and the effective delivery of primary health care services.

Suggested practical recommendations for improving value creation management and discovering competitive opportunities at the patient level:

- It is recommended to identify the expectations and needs of patients with chronic noncommunicable diseases and to increase their satisfaction with the provided health care services. The value created by the primary health care institution is based on health care management, that is the marketing of provided services, which are patient-oriented and aim to increase patient satisfaction and the availability of choices.
- Quantitative research has identified relationships between social, emotional, and functional values, and patient satisfaction and behavioral intentions. It is recommended to segment patients with T2DM based on socio-demographic characteristics and use case management models to include collaboration between primary health care institution staff and other members of the primary health care sector in the health care system.
- Patients with T2DM are concerned about their illness and how it negatively impacts the quality of their lives. They are therefore advised to communicate more closely with their family physician and other staff in the primary health care institution, and to follow the physicians' recommendations on how to protect and improve their health. Training patients how to interact more closely with health care providers is recommended.

Conclusions

- Managing the value created by Lithuanian primary health care institutions in order to improve competitiveness is a new research topic in medicine and health science. The results of this study can serve as a basis for theoretical discussion on health care management, or as a way to improve the performance of primary health care institutions.
- The competitiveness of primary health care services is improved by creating value for patients with T2DM, using elements of the marketing mix, increasing patient satisfaction, reducing costs, and improving health care behavior.
- Opportunities for acquiring a competitive advantage at the level of the primary health care institution can be discovered by examining patient satisfaction with health care services using a multidimensional value model analysis with an emphasis on marketing mix elements.

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