

Happiness and Hope for Success in T1DM Patients

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Research

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Abstract

Happiness and hope are essential parts of human health. One of the main purposes of health care, including diabetes care, are to achieve happiness and a sense of purpose in life.

Material and method

During educational workshops a short survey concerning the level of happiness and hope for success in the group of Type 1 Diabetes Mellitus (T1DM) patients was carried out. 120 patients anonymously filled in Subjective Happiness Scale (SHS) and a Hope for Success Questionnaire (KNS).

Results and conclusions

The level of subjective happiness in T1DM patients was lower than in general population for both sexes, for all age categories apart from people older than 50, who seem to be happy and satisfied with their life with no differences compared to the general population. In terms of hope for success, T1DM teenagers and adults aged 27-50 did not differ from the general population. T1DM patients older than 50 turned out to have higher hope for success in life than other T1DM patients. Special attention should be paid to patients in young adulthood (18-26), who seem to be the most pessimistic group of T1DM patients, with low self-esteem and low believe in their possibilities.

Introduction

Happiness and hope are essential parts of human health. One of the main purposes of health care, including diabetes care, are to help patients to achieve and maintain happiness and a sense of purpose in life [1] Happiness, can also be viewed as a means to achieve good health, as well as a technique to overcome challenges, encourage cooperation and ensure better adherence to therapy. While there are few studies concerning happiness and hope for success in patients with T2DM [2, 3, 4], to our best knowledge nothing was written on this subject in the group of patients with T1DM so far.

In previous studies it was indicated that combination of specific personality traits, social skills, family support and sport traditions as well as hereditary factors and access to the new technologies in T1DM treatment under the supervision of highly qualified specialist in diabetology, may result in a unique and inspiring success of the patient in life, sport and diabetes management [5, 6].

One of the ways to increase the patients' sense of control over diabetes and thus open the path to achieve success in various areas of life is continuous process of T1DM education [7]. During one of the workshops on emotional aspects of diabetes carried out online by licensed psychologists for patients with T1DM we decided to make a short survey concerning the level of happiness and hope for success in the group of patients.

Material And Method

On April 28th 2021 297 patients suffering from various types of diabetes participated in the workshop organized by industry and dedicated to the continuous glucose monitoring, of whom 120 anonymously agreed to participate in the present study and filled the questionnaires. Considering small number of patients with T2DM and other types of diabetes in the examined group, we selected patients with T1DM and carried out the analyses in this subgroup. Statistical analyzes were carried out using the R software ver. 4.0.5. To assess whether a variable is normally distributed in a cohort the Shapiro-Wilk test was performed. Differences between two groups were analysed with Student's t test or nonparametric tests (such as the Wilcoxon test), as appropriate. To compare three age groups one-way ANOVA test or Kruskal-Wallis test as non-parametric alternative tests were used. To calculate pairwise comparisons between group levels with corrections for multiple testing post hoc test (TukeyHSD) was performed. The classical threshold $\alpha = 0.05$ was considered the level of significance. Data was interpreted by licensed clinical psychologist and psychologist

Table 1
Sociodemographic profile of all the workshop participants who agreed to fill in the questionnaires

Variable	Number of participants
Age groups:	
<18 [years]	17
18-26 [years]	15
27-50 [years]	65
>50 [years]	24
Gender:	
Female	79
Male	38
Type of diabetes	
Typ 1	103

Research tools

1. *Subjective Happiness Scale (SHS)* by Sonja Lyubomirsky, Heidi S. Lepper in Polish translation by Rafal Borkowskia - 4-item self-report measure developed to assess an individual's overall happiness as measured through self-evaluation response format is a 7-point Likert-type scale. A single composite score is computed by averaging the responses to the four items following reverse coding of the fourth item. Scores range from 1.0 to 7.0, with higher scores reflecting greater happiness [8]
2. *Hope for Success Questionnaire (KNS)* by Mariola Łaguna, Jerzy Trzebiński, Mariusz Zięba - hope for success measured by the KNS questionnaire relates to the strength of the expectation of positive

effects of one's own actions. It consists of two components: a belief in having a strong will, i.e. awareness of one's own effectiveness revealed in initiating the pursuit of a goal and staying in it, and a belief in the ability to find solutions, i.e. awareness of one's own knowledge and intellectual competences, revealed in situations requiring inventing or learning new ways to achieve your goal [9]. The results of the Hoper for Success Questionnaire were calculated in sten scores: a score of (1–4) points indicates a low level of hope for success, a score of [4–7] indicates a moderate level of hope for success, and a score of (7–10] indicates a high level in this area.

The norms for general population were taken from validation studies carried out for the tests on Polish population.

Ethical approval

for the study was granted by the Jagiellonian University Bioethics Committee no 1072.6120.307.2020. The patients provided informed consent to participate in the study.

Results

1. Subjective Happiness Scale (SHS)

The level of happiness did not differ in terms of gender of the patients and in both groups was lower than the norms for general population (Tab. 2).

Table 2
SHS test score in gender groups

Female	Male	P value
N=66	N=30	
4.18 ± 1.39	4.64 ± 1.46	0.1418

The average result of the subjective feeling of happiness turned out to be lower than in the general population, with similar fluctuation (the lowest in the young adulthood). In T1DM patients older than 50 the result was significantly higher, reaching similar value as in the general population (Tab. 3).

Table 3
SHS test results in age groups

<18 [years]	18-26 [years]	27-50 [years]	>50 [years]	p-value
N=15	N=14	N=58	N=9	
4.48	3.33	4.30	5.47	0.007*
*PostHoc – group older than 50 [years] vs 18-26 [years]: p=0.004, remaining between group differences were not significant p>0.05				

2. Hope for Success Questionnaire (KNS)

Results analyzed with respect to gender show that the general level of hope for success as well as its two components: finding solutions and willpower, reached the average results, with a bit higher result for men in all three categories (Tab. 4-6).

Table 4
KNS general test results in gender groups

Female N=66	Male N=30	p-value
5.39 ± 2.23	6.10 ± 2.53	P=0.2819

Table 5
KNS ability to find solution subscale results in gender groups

Female N=66	Male N=30	p-value
5.08 ± 2.09	6.30 ± 2.43	0.0568

Table 6
KNS willpower subscale results in gender groups

Female N=66	Male N=30	p-value
5.63 ± 2.29	5.90 ± 2.67	0.6906

In the young adulthood (18-26 [years]) the hope for success in life and the feeling that one can cope with his/her problems significantly decreases. In contrast, we observed that patients above 50 years of age have significantly higher results in terms of hope for success that the average for general population (Tab. 7-10).

Table 7
KNS general test results in age groups

<18 [years] N=15	18-26 [years] N=14	27-50 [years] N=58	>50 [years] N=9	p-value
5.55 ± 2.25	3.50 ± 1.68	5.93 ± 2.21	7.17 ± 1.72	0.0002*
*Post Hoc significant difference was observed between group 18-26 [years] vs 27-50 [years]; p=0.004 and 18-26 [years] vs >50 [years]; 0.005				

Table 8
KNS ability to find solution subscale results in age groups

<18 [years] N=15	18-26 [years] N=14	27-50 [years] N=58	>50 [years] N=9	p-value
5.64 ± 2.29	3.17 ± 1.34	5.70 ± 2.0	7.50 ± 1.87	0.0001*

* Post Hoc significant difference was observed between group <18 [years] vs 18-26 [years]; p=0.0170, between group 18-26 [years] vs 27-50 [years] p=0.0009 and between group 18-26 [years] vs >50 [years] p=0.0002

Table 9
KNS willpower subscale results in age groups

<18 [years] N=15	18-26 [years] N=14	27-50 [years] N=58	>50 [years] N=9	p-value
5.82 ± 2.04	4.17 ± 1.99	5.89 ± 2.48	6.83 ± 2.32	0.0856

Table 10
Distribution of KNS results according to sten categories

	Sten scores		
	Low: [1-4]	Average (4-7)	High: [7-10]
Whole group	25	33	15
Female	19	22	10
Male	5	10	5

Discussion

Studies with the use of Subjective Happiness Scale done on a large populations indicate that the average score runs from about 4.5 to 5.5, depending on the analysed group. College students tend to score lower (averaging a bit below 5) than working adults and older, retired people (who average 5.6) [10, 11].

In our study, both women and men achieved lower results than the average for population, with the results for women being similar to men (F=4.18, M=4.64, p=0.1418, Tab. 4). When analyzing the results according to the age categories, (<18, 18-26, 27-50), the average result of the subjective feeling of happiness turned out to be lower than in the general population, with similar fluctuation (the lowest in the young adulthood). In T1DM patients older than 50 the result was significantly higher, reaching similar value as in the general population.

This results may confirm observations from other studies that living with chronic illness is a complex, dynamic, cyclic and multidimensional process, and involves the development of special attributes: Acceptance, Coping, Self-management, Integration and Adjustment [12]. If those aspects of functioning

with chronic illness are not fully developed, the level of subjective happiness may be lower, overvalued by frustration or anxiety. Proper education, adequate T1DM treatment with access to highly qualified specialists and new technologies as well as psychological support could be helpful in this respect [5].

On the other hand, high level of happiness in the group of T1DM patients older than 50 is an optimistic indicator that the acceptance of illness and feeling of fulfillment may come with age, as the patients confront their life expectations, possibilities and their fears with real life challenges, gaining the ability to overcome obstacles regardless of the chronic illness or even being motivated by it [13]

Results analyzed with respect to gender show that the general level of hope for success as well as its two components: finding solutions and willpower, reached the average results, with a bit higher result for men in all three categories. This shows that the general level of hope for success as well as the subjective feeling that one can find solution to difficult problems and has a strong will power to pursue one's goals do not vary the group of T1DM from general population

However when comparing the results for age groups, we observed that in the young adulthood (18-26 [years]) the hope for success in life and the feeling that one can cope with his/her problems significantly decreases. This may suggest that young adults with T1DM being in the process of making important life decisions, undertaking essential challenges connected with studies, choosing job, developing family may be confronted with fears and obstacles connected with their diabetes [14]. This group of T1DM patients requires special attention and support of diabetologists and health care professionals and educators, as positive motivation, proper education and psychological support may be beneficial of young adults, helping them to change their attitude and overcome anxiety, and thus create a solid background for happy and successful life with diabetes.

In contrast, we observed that patients above 50 years of age have significantly higher results in terms of hope for success than the average for general population. This shows that they believe in having a strong will, awareness of one's own effectiveness revealed achieving their goals and a belief in the ability to find solutions in difficult situations.

This result may be connected with the fact that those T1DM patients already achieved many of their life goals, managed to cope with many life challenges in spite of having T1DM, learned that T1DM did not stop them from fulfilling their dreams or even motivated them to do so. They base their future plans on their previous positive experiences.

One of the study limitations is the fact that since the questionnaire was anonymous and we did not have access to the clinical data, we were unable to correlate parameters assessed during the study with disease-related variables like diabetes duration, mode of diabetes management (multiple daily injections vs insulin), usage of continuous monitoring system, BMI, presence of diabetes-related complications and others. On the other hand, the fact that we analyzed "random sample" of patients being followed in different medical centers may be considered as the advantage of the study. Another limitation may be the

unequal size of the groups. However, the statistically used analyzes allow us to draw the presented conclusions.

According to our best knowledge, this study examining the level of happiness and hope for success in the population of T1DM patients is first one in Poland, we also have not found similar analyses in the international literature. This makes it pioneering and inspiring for further research. The limitation of the study is lack of more specific data concerning the duration of diabetes in particular patients, type of treatment applied, level of education etc. In the condition of a workshop we did not have the possibility to collect more information in this respect - it would be worth to broaden the analyzes in the future.

Conclusion

- The level of subjective happiness in the examined group of T1DM patients turned out to be lower than in the general population for both men and women, for all age categories apart from people older than 50, who seem to be happy and satisfied with their life
- In terms of hope for success, T1DM teenagers and adults aged 27-50 do not differ from the general population, they have good coping mechanisms and believe that their actions may produce good results.
- T1DM patients older than 50 turned out to have higher hope for success in life than other T1DM patients and than the average for general population.
- Special attention should be paid to patients in young adulthood (18-26), who seem to be the most pessimistic group of patients, with low self-esteem and low believe in their possibilities. In this group of patients, psychoeducation concerning life possibilities and improving quality of life could be helpful, stimulating the idea that T1DM patient may lead fully happy and successful life.

Abbreviations

T1DM – Type 1 Diabetes Mellitus

SHS - Subjective Happiness Scale

KNS - Hope for Success Questionnaire

Declarations

- Ethical Approval and Consent to participate

Ethical approval for the study was granted by the Jagiellonian University Bioethics Committee no 1072.6120.307.2020. The patients provided informed consent to participate in the study.

- Consent for publication

All authors consent for publication of the paper

- Availability of supporting data

The data that support the findings of this study are available on request from the corresponding author, Katarzyna Cyranka

- Competing interests

All authors declare no conflict of interest.

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- Authors' contributions

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None

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