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Original Article

The Relationship Between Social Media Use, Health Applications, and Metabolic Control in Young People with Type 1 Diabetes

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ABSTRACT

Aim: This research aimed to determine the characteristics of social media and mobile/web application usage in young people with type 1 diabetes (T1D) and to examine its effects on their metabolic control.

Materials and Methods: We enrolled 206 young people with T1D (aged 10-25 years) in this cross-sectional study. Face-to-face interviews were used to assess the relationships between their social media use, health practices, and metabolic control.

Results: The participants (55% girls) had a mean age of 13.33±4.40 years and a median diabetes duration of 4.83 years (interquartile range=7.31). The last 1-year average hemoglobin A1c (HbA1c) values were 8.02±1.39%. It was observed that HbA1c increased as daily phone usage time increased (r=0.18; p=0.01). The primary reason for internet use was accessing social media (73%). Other prevalent uses included watching movies (42%), alongside using health apps, playing games, and online shopping (each at 38%), and accessing education/information (37%). Blood sugar monitoring was the most frequently used application with 67 users (27.9%). It was followed by a pedometer (60 users; 25.0%) and carbohydrates counting (56 users; 23.3%). Less common applications included continuous glucose monitoring (26 users; 10.8%), care reminders (13 users; 5.4%), and pulse rate monitoring (9 users; 3.8%). The HbA1c values of those who used a blood sugar monitoring app were lower than those who did not use it (7.71±1.38; 8.23±1.36 p=0.01, respectively). Participants who used a pedometer app had a higher body mass index standard deviation score than non-users (0.53±1.11 vs. 0.32±0.99, respectively); however, this difference was not statistically significant (p=0.237).

Conclusion: Health applications may support diabetes management in young people with T1D, while excessive digital engagement may negatively impact metabolic outcomes.

Keywords: Type 1 diabetes, social media, health applications, young people

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Introduction

In recent years, digital technology has been involved in every aspect of life. Healthcare is one of the areas which uses digital technology most effectively and beneficially. Individuals can access health-related digital content without limitations of time and place. Smartphones provide faster access to digital content and have become an integral part of daily life (1). Internet usage is increasing day by day. Along with this increase, children and teens use the internet more. The pandemic increased the exposure of children and young people to digital screens, resulting in a surge in their use of mobile and web technology. Children and young people have easily adopted technology and new communication opportunities into their lives and education (2). This adaptation may be advantageous in type 1 diabetes (T1D) management to help young people develop self-management skills and behaviours (3). Numerous medical applications and internet options have emerged to meet the needs of individuals with T1D (4,5). When research on the use of digital technology, web, and mobile applications was examined, it was seen that there were studies on young people without chronic diseases. However, understanding the health consequences of the use of digital technology in chronic diseases is valuable in the development of new applications and web services. To date, there is insufficient information on the impact of smartphone apps and technology services, especially on whole-life conditions such as T1D. This research was conducted in order to determine the use of mobile, web, and communication technologies by young people aged 10 to 25 years with T1D and their effects on metabolic control.

Materials and Methods

Study Design

A descriptive cross-sectional survey was conducted with young people with T1D from June to August 2024. The survey incorporated closed questions about demographics and technology use. The survey was designed in a paper format and was filled out using a face-to-face interview technique under the observation of the researcher.

Ethics Approval

This study was approved by the Ege University Medical Research Ethics Committee (approval number: 24-9T/53, date: 05.09.2024). The aim of this study was explained to each participant, and written informed consent was obtained.

Inclusion Criteria

Inclusion criteria were as follows: being young (aged 10-25 years inclusive), having a diagnosis of T1D for at least 6 months, being able to read and understand Turkish, and being able to provide informed consent.

Survey Design

The survey consisted of 2 parts, with each part of the survey presented on a separate page. Part 1: Demographic information and technology access: including age, sex, educational background, age at diabetes diagnosis, mobile phone ownership, mobile phone and web usage time, the purpose of using the internet, and mobile phone and social media usage. Part 2: Using technology to manage diabetes and health: currently available apps and preferences for health apps.

Statistical Analysis

Data analysis was performed with a statistical package (SPSS Inc., version 25.0, Chicago, IL, USA). The normal distribution of data was assessed using the Shapiro-Wilk test with $p>0.05$ indicating a normal distribution. The survey data were analysed and summarized using descriptive quantitative analyses including means, standard deviations, and proportions. Correlation analysis was applied for the relationship between data. Only completed surveys were included in the analysis.

Results

This study examined the demographic data for 206 children and young people with T1D. Among the participants, 55% (n=107) were female, and people aged 10 to 15 years accounted for 47.6% (n=89). The most recent average hemoglobin A1c (HbA1c) value before this study was recorded as 8.12±1.47%. However, to minimize the impact of lifestyle and psychological factors which could affect treatment adherence and HbA1c, the average HbA1c value over the last year (8.03±1.39%) was also calculated. Table I shows the demographic characteristics, information about T1D, and physical findings. Out of the 206 study participants, only 35 did not have their own mobile phones. They were using their family's phone. In addition, 83% (n=171) of the children and young people had a smartphone, 64% (n=132) had their own computer, and 96% (n=198) had daily internet access. On average, participants spent 2.19±2.11 hours per day on mobile phones and spent 3.16±2.07 hours per day on the internet. As the age of the participants increased, the duration of internet

use increased (r=0.291; p=0.001). As the duration of internet use increased, the HbA1c value also increased (r=0.180; p=0.017). Regression analysis showed that age had no effect on HbA1c (R=0.124, R2=0.015, F=2.832, p=0.094). The study participants mainly used the internet to enter social media (73%). Other areas of use of the internet were watching movies (42%), playing games (38%), accessing education and information (37%), health applications (38%), as well as shopping online (38%). Regarding mobile health (mHealth) applications, the majority of participants reported using their smartphones and internet-based tools primarily for diabetes management apps (62%), followed by pedometers (25%), heart rate monitoring (3.8%), and reminder systems. There was no effect of pedometer use on HbA1c, but it was observed that subjects with high body mass index (BMI) standard deviation score (SDS) used pedometers (pedometer user BMI SDS: 0.53±1.11; non-pedometer user BMI SDS: 0.32±0.99, p=0.237). The last HbA1c value and 1-year average HbA1c value of those who used any health application were found to be lower than those who did not use them (p=0.020; p=0.011, respectively). Likewise, both the 1-year average and the last HbA1c value of those using diabetes-related apps were found to be lower (p=0.047; p=0.024, respectively). Table II and Table III summarize the participants' mobile app and internet usage and their diabetes effects.

Table I. Demographic characteristics, information about type 1 diabetes and physical findings

	n	**%**
Sex		
Male Female	98 108	47.57 52.43
Age group (years)		
10-15 15-20 >20	89 74 24	47.59 39.57 12.83
Treatment		
CSII MDI	67 118	36.22 63.78
	Mean ± SD	**Median (IQR)**
Physical findings		
Weight SDS Height SDS BMI SDS	0.18±1.06 -0.36±1.06 0.38±1.03	0.21 (1.50) -0.43 (1.48) 0.50 (1.38)
Information about type 1 diabetes		
Diabetes duration (years) HbA1c (%) Mean HbA1c (%) in the past 1 year Total insulin (U/kg/d) Basal insulin (%) Bolus insulin (%)	5.81±4.64 8.12 ±1.47 8.03±1.39 0.83±0.32 42.79±11.63 57.17±11.63	4.83 (7.31) 8.0 (1.80) 7.90 (1.80) 0.81 (0.32) 41.13 (15.96) 58.82 (15.96)

SDS: Standard deviation score, IQR: Interquartile range, SD: Standard deviation, CSII: Continuous subcutaneous insulin infusion, MDI: Multiple daily injections, HbA1c: Hemoglobin A1c

Table II. Online applications used by young people with type 1 diabetes

Reason for internet usage	**%**	**Usage of mobile health applications**	**%**
Youtube and watching videos Accessing and listening to music Instagram, Facebook, X Watching movies Playing various games Access to education and information Shopping Health applications	77 53 50 42 38 37 22 33	Carbohydrate counting application Continuous glucose monitoring application Capillary blood sugar monitoring application Pedometer application Heart rate counting application Reminder application	23.3 10.8 27.9 25 3.8 5.4
Social media user	73	Diabetes application user	62

Table III. HbA1c values of young people with type 1 diabetes according to social media and health applications			
	Social media users	**Non-social media users**	**p-value**
HbA1c (%)	8.04±1.44	8.32±1.56	0.316
1-year average HbA1c (%)	7.96±1.33	8.19±1.54	0.262
	Health applications users	**Non-health applications users**	**p-value**
HbA1c (%)	7.87±1.57	8.40±1.30	0.020*
1-year average HbA1c (%)	7.77±1.43	8.31±1.29	0.011*
	Diabetes applications users	**Non-diabetes applications users**	**p-value**
HbA1c (%)	7.93±1.54	8.36±1.36	0.047*
1-year average HbA1c (%)	7.81±1.41	8.28±1.33	0.024*
*: p<0.05 HbA1c: Hemoglobin A1c			

Discussion

The use of social media and mHealth applications is quite common in young people with T1D (6). However, the mHealth applications, web services, and social media preferences of young people with T1D, their frequency of use, and their effects on metabolic control are unknown. This research was conducted in order to determine the usage characteristics of mobile and web applications in young people with T1D and to investigate their effects on metabolic control.

The multifunctional characteristics of smartphones and the internet allow multiple interventions, including knowledge and self-management skills enhancement. For this reason, smartphones and the internet are used at a high rate among adolescents and young people worldwide. According to the Center for Internet and Technology (2018), an estimated 95% of adolescents in the United States own a personal computer. A total of 45% of adolescents have stated that they use the internet constantly on their devices. In the United Kingdom, 62% of adolescents aged 12 to 15 years and in Australia, 94% of adolescents aged 16 to 17 years own a mobile phone (7). In our research, 64% of the children with T1D had a computer, 83% had a smartphone, and 96% had internet access every day. These results show that our participants were using their computers, the internet, and smartphones more than was reported in the worldwide data. This result makes the purpose of our research more important.

Especially, there is a need for alternative ways to support the diabetes management of young people with T1D. mHealth apps have the potential and power for the promotion of self-management in people with T1D (8). Today, more than 100,000 health-related applications are providing useful tools for those individuals who want them (9). Research has shown the positive effects of mHealth applications in diabetes management (4,10,11). One study which looked at 13 diabetes mobile apps found that they did work to lower HbA1c. The intervention group had an average 0.44% drop compared to the control group (12). Majeed-Ariss et al. (13) did a systematic review of the literature on the effectiveness of mobile apps designed to help teens manage their diabetes. They found that the average number of times blood glucose levels were checked each day went up by 50%, but HbA1c did not change significantly (13). In our study, we found that participants using mobile diabetes applications had lower HbA1c values than those using other applications. This result supports the literature.

However, mobile application and internet usage time is an important factor. While the internet usage time in the world is 5 hours 25 minutes/day, in our country, this rate was determined to be 7 hours 24 minutes/day (14). When participants were asked about the time they spent on the internet and phone, on average, they spent 2.19±2.11 hours per day on mobile phones and 3.16±2.07 hours per day on the internet. We observed an increase in the participants' internet usage time as their age increased. Increasing internet usage time resulted in an increase in HbA1c values. The increase in internet usage time may have caused the exercise time to decrease. However, we did not include exercise times in our study. It is one of our limitations.

Today's adolescents and young adults have grown-up in a technological age, embracing technology as a way to interact with others and education in social media (15). The role of social media (Facebook, Twitter, YouTube, blogs, and wikis) has expanded to diabetes education and management in youth. According to research, many

individuals are seeking social and emotional support on the Web (16). Malik et al. (6) stated in her research that adolescents with T1D expressed interest in the use of social media to support their diabetes management. Social media (Facebook, Instagram, music, and information videos) may be a more effective method for adolescents to communicate with their diabetes care team. In addition, social media may be a tool for adolescents to help each other (6). Petrovski et al. (17) found that social media usage allows people with T1D to gain diabetes knowledge and interact in their daily insulin adjustments. Patients with chronic diseases around the world use the internet to seek, meet, and interact with patients with similar problems (17).

In our research, participants used social media to listen to music (53%), watch videos (77%), and interact with their friends (50%). We found that adolescents and young people who used social media had lower HbA1c values than those who did not use it. Although the result was not statistically significant, it reflected the potential importance of social media for peer support and information sharing.

However, while acknowledging this potential of social media, we cannot ignore the real and serious risks inherent in these platforms' uncontrolled nature. Today's social media environment risks becoming a "wild west" for vulnerable groups, particularly adolescents (18,19). On these platforms, inappropriate eating behaviours and unhealthy "miracle" diets can be normalized, and even a serious chronic disease like T1D can be trivialized by entirely fraudulent and dangerous claims, such as promises of a cure without insulin (20). Inadequate oversight and age-specific restrictions allow misinformation to spread rapidly, distorting body image and negatively impacting young individuals prone to eating disorders (21). The diabetes team should support the use of mobile and internet applications, guiding patients toward reliable resources, while must focus on implementing regulatory oversight, fostering professional medical engagement, and enhancing media literacy. Social media can only transform into a constructive force once these conditions are met.

Study Limitations

This study has two main limitations. First, all data on phone usage and application preferences were based on self-report, which may introduce recall bias or social desirability bias. Second, the single-center design and relatively small sample size (n=206) limit the generalizability of the findings to all young people with T1D. The results may not be applicable to populations with different socio-cultural or economic backgrounds.

Conclusion

As a result, recognizing that adolescents and young adults with T1D are in need of support in diabetes management, mobile diabetes apps may offer a means to enhance collaboration with the care team in order to improve diabetes management and HbA1c outside of the clinical setting. Moreover, when used correctly, social media and the internet can provide benefits in diabetes management, peer support, and care. The diabetes team should support mobile/internet applications in order to enhance outcomes and improve diabetes education. Additionally, online education programs should be developed due to reasons such as the increasing prevalence of T1D, the insufficient number of health professionals, and difficulties in access.

Ethics

Ethics Committee Approval: This study was approved by the Ege University Medical Research Ethics Committee (approval number: 24-9T/53, date: 05.09.2024).

Informed Consent: Written consent was obtained from the chidren and their parents.

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Footnotes

Authorship Contributions

Concept: G.D., Y.A.A., S.Ö., D.Ö.K., D.G., Design: Y.A.A., S.Ö., D.Ö.K., D.G., Data Collection or Processing: G.D., Analysis or Interpretation: G.D., Literature Search: G.D., Y.A.A., S.Ö., D.Ö.K., D.G., Writing: G.D., Y.A.A., S.Ö., D.Ö.K., D.G.

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References

1. Wilmer HH, Sherman LE, Chein JM. Smartphones and cognition: a review of research exploring the links between mobile technology habits and cognitive functioning. Front Psychol. 2017; 8:605.
2. Sirer E. Eğitimin ekran üzerinden teknolojik dönüşümünde pandemi döneminin etkisi. OPUS International Journal of Society Researches. 2020; 16:1-1.
3. Zhao X, Huang H, Zheng S. Effectiveness of internet and phone-based interventions on diabetes management of children

and adolescents with type 1 diabetes: a systematic review. Worldviews Evid Based Nurs. 2021; 18:217-25.

4. Doupis J, Festas G, Tsilivigos C, Efthymiou V, Kokkinos A. Smartphone-based technology in diabetes management. Diabetes Ther. 2020; 11:607-19.
5. Martínez-Pérez B, de la Torre-Díez I, López-Coronado M. Mobile health applications for the most prevalent conditions by the World Health Organization: review and analysis. J Med Internet Res. 2013; 15:e120.
6. Malik FS, Panlasigui N, Gritton J, Gill H, Yi-Frazier JP, Moreno MA. Adolescent perspectives on the use of social media to support type 1 diabetes management: focus group study. J Med Internet Res. 2019; 21:e12149.
7. Virella Pérez YI, Medlow S, Ho J, Steinbeck K. Mobile and web-based apps that support self-management and transition in young people with chronic illness: systematic review. J Med Internet Res. 2019; 21:e13579.
8. Rangraz Jeddi F, Nabovati E, Hamidi R, Sharif R. Mobile phone usage in patients with type II diabetes and their intention to use it for self-management: a cross-sectional study in Iran. BMC Med Inform Decis Mak. 2020; 20:24.
9. Whitehead L, Seaton P. The effectiveness of self-management mobile phone and tablet apps in long-term condition management: a systematic review. J Med Internet Res. 2016; 18:e97.
10. Chin-Jung L, Hsiao-Yean C, Yeu-Hui C, Kuan-Chia L, Hui-Chuan H. Effects of mobile health interventions on improving glycemic stability and quality of life in patients with type 1 diabetes: a meta-analysis. Res Nurs Health. 2021; 44:187-200.
11. Eberle C, Löhnert M, Stichling S. Effectiveness of disease-specific mHealth apps in patients with diabetes mellitus: scoping review. JMIR Mhealth Uhealth. 2021; 9:e23477.
12. Bonoto BC, de Araújo VE, Godói IP, et al. Efficacy of mobile apps to support the care of patients with diabetes mellitus: a systematic review and meta-analysis of randomized controlled trials. JMIR Mhealth Uhealth. 2017; 5:e4.
13. Majeed-Ariss R, Baildam E, Campbell M, et al. Apps and adolescents: a systematic review of adolescents' use of mobile phone and tablet apps that support personal management of their chronic or long-term physical conditions. J Med Internet Res. 2015; 17:e287.
14. Kemp S. Digital 2020: 3.8 billion people use social media. We Are Social UK; 2020 [cited 2024 Jul 14]. Available from: https://wearesocial.com/uk/blog/2020/01/digital-2020-3-8-billion-people-use-social-media/
15. Spies Shapiro LA, Margolin G. Growing up wired: social networking sites and adolescent psychosocial development. Clin Child Fam Psychol Rev. 2014; 17:1-18.
16. Fergie G, Hunt K, Hilton S. Social media as a space for support: Young adults' perspectives on producing and consuming user-generated content about diabetes and mental health. Soc Sci Med. 2016; 170:46-54.
17. Petrovski G, Zivkovic M, Stratrova SS. Social media and diabetes: can Facebook and Skype improve glucose control in patients with type 1 diabetes on pump therapy? One-year experience. Diabetes Care. 2015; 38:e51-2.
18. Potvin Kent M, Pauzé E, Roy EA, de Billy N, Czoli C. Children and adolescents' exposure to food and beverage marketing in social media apps. Pediatr Obes. 2019; 14:e12508.
19. Tsochantaridou A, Sergentanis TN, Grammatikopoulou MG, Merakou K, Vassilakou T, Kornarou E. Food advertisement and dietary choices in adolescents: an overview of recent studies. Children (Basel). 2023; 10:442.
20. Das L, Mohan R, Makaya T. The bid to lose weight: impact of social media on weight perceptions, weight control and diabetes. Curr Diabetes Rev. 2014; 10:291-7.
21. Verbist IL, Condon L. Disordered eating behaviours, body image and social networking in a type 1 diabetes population. J Health Psychol. 2021; 26:1791-802.