Empowerment of Diabetes Mellitus Patient during COVID-19 Pandemic Era Through Online Gathering

by Nur Rochmah

Submission date: 17-Mar-2023 11:14AM (UTC+0800)
Submission ID: 2039051972
File name: atient_during_COVID-19_Pandemic_Era_Through_Online_Gathering.pdf (250.06K)
Word count: 3874
Character count: 21525

JURNAL PENGABDIAN MASYARAKAT DALAM KESEHATAN
Vol. 4 No. 2, October 2022
https://e-journal.unair.ac.id/JPMK

EMPOWERMENT OF DIABETES MELLITUS PATIENT DURING COVID-19 PANDEMIC ERA THROUGH ONLINE GATHERING

Nur Rochmah, Sukmawati Basuki, Fatimah Arief, Muhammad Faizi, Faisal Faisal, Juniastuti Juniastuti and Herman Kosasih

Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

ARTICLE HISTORY
Received: October 07, 2022
Accepted: December 29, 2022

CONTACT
Nur Rochmah
drnurrochmah@gmail.com
Faculty of Medicine,
Universitas Airlangga,
Surabaya, Indonesia

ABSTRACT

Introduction: In the COVID-19 pandemic, social restriction and lock-down policies were implemented. It has far-reaching implications in many sectors of life including health, particularly in patients with chronic diseases, one of which is Type-1 Diabetes Mellitus (T1DM). The purpose of this community service in the form of online gathering is to facilitate patients to ask questions and consult with pediatricians, due to the limitations of patients to consult directly due to the pandemic.

Methods: Community service is conducted online for T1DM patients or their relatives on Sunday, September 26, 2021, from 12.00 - 13.30 WIB. The Community service was divided into several stages, including before, during, and after the online gathering. The T1DM patients or their relatives are participants in this community services. The topic are types of Diabetes Mellitus, clinical presentation, disease progression, the diagnostic process, and its management therapy of type 1 diabetes mellitus.

Results: The community service was attended by 54 parents of T1DM patient. The online gathering goes smoothly, without being constrained by something. During the online gathering, subjects actively participate in every session during the online gathering. Several questions were asked by the participants and answered well by the speakers.

Conclusion: This community services activities allow participant to be able to ask question about their problem according to diabetes mellitus. Participants can consult online with pediatricians. This online gathering has a limited time, so participants can be divided into several breakout rooms with several accompanying pediatricians, so that the QnA session can be done optimally.

KEYWORDS

Community; COVID-19; diabetes; T1DM

Cite this as:

Rochmah, N., Basuki, S., Arief, F., Faizi, M., Faisal, F., Juniastuti, J., & Kosasih, H. (2022). Empowerment of Diabetes Mellitus Patient during Covid-19 Pandemic Era through Online Gathering. *J. Pengabdian Masyarakat dalam Kesehatan.* 4(2). 95-101. Doi: 10.20473/jpmk.v4i2.37884

1. INTRODUCTION

World Health Organization (WHO) emergency committee declared a global health emergency based on the increasing cases of COVID-19 around the world (Velavan, 2020). Viral infection COVID-19 have been spread widely around the world since 2019. In this pandemic era, social restrictions and lockdown policies were implemented to reduce the spreading of the virus. This policy had a broad implication in various sectors of life, especially in chronic patients, including Type 1 Diabetes Mellitus (T1DM). Several research shown that T1DM patients was a high-risk group for COVID-19 infection. On the other hand, therapy adherence and metabolic control was

decreased during the pandemic era, causing T1DM patients infected with COVID-19 to present with acute emergency complications, particularly Diabetic Ketoacidosis (DKA) (Duan, 2020; Cui, 2019; Dube, 2018; Shieh, 2019; Papanikolaou, 2012). Therefore, it is important to determine the risk group for T1DM, especially during the COVID-19 pandemic, based on gene polymorphisms, antibody markers, and evaluation of therapy adherence in T1DM children.

Type-1 Diabetes Mellitus (T1DM) was the most prevalent chronic autoimmune disease with approximately 70.000 children diagnosed worldwide annually. There are 1.153 children in Indonesia diagnosed with T1DM. According to data at General Hospital Dr. Soetomo Surabaya, there are 70 T1DM children in 2002-2014, with a 40% rise in new patient visits (Renukuntla, 2009; RSUD Dr. Soetomo, 2020). Pathogenesis in T1DM, polymorphism occurs in several gene groups. The presence of environmental factors can trigger the autoimmune process followed by apoptosis dan beta cell pancreas destruction. Approximately 10% of remaining beta cell pancreas will manifest symptoms. Some study reports that the most prevalent antibodies in T1DM children was Glutamic Acid Decarboxylase (GAD) and Zinc Transporter-8 (ZnT8). Meanwhile, the gene polymorphism can occur in the Human Leukocyte Antigen (HLA) or non-HLA genes, such as PTPN22 gene (Valta, 2020; Sperling, 2008). Research data on gene polymorphism and antibody marker in Asian T1DM patients was still limited.

Health centers around the world was currently facing issues including the increasing demand for services. The majority of the increased psychiatric cases, mainly triggered by fear of illness, death, stigma, disinformation, and social distancing policies that affect global health care delivery (WHO, 2020; Kakkar, 2016). This condition impairs compliance; therefore, it can affect glycemic control and lead to acute or chronic complications (Hood, 2009; Delamater, 2006). The most prevalent acute complication was Diabetic Ketoacidosis (DKA), which is an emergency condition. The potential mechanisms of increased susceptibility to COVID-19 in T1DM patients were an uncontrolled hyperglycemia condition followed by several other molecular interactions. Consequently, morbidity and mortality have increased during the COVID-19 pandemic (Kretchy, 2021). There is a correlation between compliance and glycemic control in T1DM children. The purpose of community service in the form of online gathering was to facilitate patients for asking questions and consult with pediatricians, due to the pandemic's restrictions on the direct patient consultation.

2. MATERIAL AND METHODS

The Community service was carried out on September 2022. The online gathering was on Sunday, September 26th 2021, at 12.00-13.30 WIB. This gathering was conducted using Zoom Meeting with a centralized setting in Meeting Room 1 of Child Health Science Department, General hospital Dr. Soetomo Surabaya. This online gathering was divided into several stages, as follows:

Before the online gathering

There are several planning tasks to ensure the success of this online gathering before the activity was put into action, such as: discussion to choose the theme of activity, collaborating with senior lecturers as the speaker during the gathering, media promotion, and cooperation meeting between committees, moderators, and speakers. The promotion was distributed through online social media and whatsapp group. This online gathering is accesible for all T1DM patients or their relatives.

During the online gathering

The online gathering was begun by the moderator. There are several sessions during the online gathering. The first session was material presentation session by the speaker. Then followed with the interactive session, including Question-and-Answer

session and story-sharing. The event ended with a photo session with all of the participants.

After the online gathering

This phase is to evaluate the online gathering. The evaluation was conducted using a Google Form questionnaire that was sent after the online gathering ended. The questionnaire was distributed by Whatsapp Group made by the committee. This Whatsapp group was also used as a media for sharing session outside the online gathering.

3. RESULTS

The community service was attended by 54 parents of T1DM patient via online Zoom Meeting. The opening of this event was started by the MC and the head of Child Health Department General Hospital Dr. Soetomo Surabaya. Afterwards, the speaker immediately explains the educational material to the audience. Some of the material provided is related to knowledge about several types of Diabetes Mellitus, understanding of Type 1 Diabetes Mellitus in general, clinical presentation, disease progression, the diagnostic process, and its management therapy.

The material is presented using a slide show media that is displayed through a zoom meeting. Power Point slide show was one of the most effective medium of delivery. Power point has been proven to be effective as an interactive delivery medium during online learning in several studies (1,2). With the goal to making it easier for the audience to understand what the speaker is saying, the presentation is designed to be as appealing as possible and uses simple grammar. The power point slides contain some basic information that must be known by parent's of T1DM children. The most fundamental information was about the type of DM. Diabetes Mellitus consist of Type-1 DM, Type-2 DM, gestational DM, and other type of DM. The most prevalent type of

Table 1. Treatment of Type 1 Diabetes Mellitus

Treatment	Explanation
Insulin	Insulin is crucial for the treatment of T1DM. The dosage is different for each child, must consult a pediatrician and do not self-medication.
Nutrition	Carbohydrate has the greatest impact on blood glucose; carbohydrate 50-55%, fat 30-35%, and protein 10-15%
Education	T1DM is a chronic condition that requires knowledge, motivation, skills, and mindfulness
Sport	Helps to lower blood sugar levels and increase insulin sensitivity, need to consult a physician before starting
Monitoring	Need to do daily and monthly monitoring
Complication	Microvascular and macrovascular complication; acute and chronic complication
Coronary Heart Disease (CHD)	CHD caused by plaque in the blood vessels of the heart, making the diameter of the blood vessels is narrowed, blood flow become disturbed and can get clogged
CHD in T1DM	Uncontrolled blood sugar can cause dyslipidemia and dyslipidemia has the potential of causing CHD

Figure 1. Slideshows during the Presentation Session

DM in pediatric patient of General Hospital Dr. Soetomo was Type-1 DM. In this condition, the body can't produce insulin due to the damaged pancreatic cells, thus insulin must be obtained from external. Furthermore, the speaker also provides a clinical manifestation that can be found in T1DM patient, such as polyuria, polydipsia, polyphagia, weight loss, elevated blood sugar, Diabetic Ketoacidosis (DKA), and Kusmaull breathing (fast and deep breathing). The course of the disease is prediabetes – clinical manifestation of diabetes – honeymoon period – persistent insulin dependence. Patients will be diagnosed if they have classic DM symptoms and showed positive results from the HbA1C and GDA antibody examination. The audience also informed about the management they needed after diagnosed with T1DM. Some of the essential treatments are shown in table 1.

Some of question from the participants:

1. Why patient with T1DM had never had a menstrual period?
2. What the delayed of puberty phase was one of T1DM's effects?
3. What examinations should be tested by her children, and how frequently should it be routinely checked?
4. What the first 6 months after DKA was still in honeymoon period and is there any possibility of recurrence?
5. They are asking if the child vomited, what medicine should be taken for the patient. The parents were also asking any tips or techniques to encourage the children who have become reluctant to inject insulin daily.
6. What coronary heart disease (CHD) is a common thing in DM patients and what complications frequently followed.

4. DISCUSSION

The participant joined a Question-and-Answer (QnA) session after the presentation session. During the QnA session, participant was given the opportunity to asking questions related to the presentation material and complaints during the pandemic. Several questions were posed. The first question came from patient's parents, initial A, who is 21 years old but has never had a menstrual period. The parents are unsure where to refer their daughter. The speaker responded to this question by stating that pediatricians or obstetricians with consultant competency, specifically it can be consulted with experts in the local area. Otherwise, in some cases it is possible to have menstrual irregularities but this is also not related to the diagnosis of DMT1, BMI, physical activity or insulin dose used. It's usually caused by other factors that affect the time of the first menstruation and menstrual irregularities in girls with T1DM (Schweiger et al., 2011).

The second question came from the parents of an 11-year-old child with the initials SA from Solo. They stated that their children had a honeymoon period for 2 years. This patient had a twin sibling who had already begun menstruation. But neither of them has had a physical change (signs of puberty). The twins have had T1DM for 4 years. The patient's parents were wondering whether this delayed puberty phase was one of T1DM's effects. The speaker described that this condition as SLE, an autoimmune disease. This disease is risky for the patient since it can lead to another autoimmune diseases. This is because children have poor metabolic control and disrupt the puberty phase. Insulin and leptin act in the metabolic system in the peripheral circulation in the hypothalamus which is responsible for metabolism and reproduction. The insulin receptor acts on the GnRH nerves. Reduced insulin production may lead to delayed puberty due to nerve damage in normal GnRH. In some patients on chronic insulin therapy, severe growth retardation with pubertal delay occurs, although this is very rare. This is also usually accompanied by symptoms such as obesity, hepatomegaly, Cushingoid facies and elevation of transaminases (Chowdhury, 2015).

The third question comes from the patients initials SL, who's also an adult T1DM patients and already had a child. The patient's son is obese; therefore, she is concerned that her children will develop diabetes like her. She was asking about what examinations should be tested by her children, and how frequently should it be routinely checked. The speaker explained that there are two issues in this situation. The first issue is that the child inherits genes from the mother. Twenty to thirty percent of children who inherit T1DM from their parents, will also develop T1DM. the children had to do T1DM screening, such as examination of GAD antibody and autoimmune marker. Even if the children had a susceptible T1DM genes, the sign and symptoms will manifest ranging from 1-2 years to 10 years. The susceptible genes will manifest if it's exposed to the environment situation. The second issues were due to the obesity factor, there is a potential for the child to develop Type-2 Diabetes Mellitus (T2DM) in their adolescent age. This is because environmental factors, such as eating too many snacks or limited physical activity, have made it more susceptible. The etiology of T2DM is caused by insulin resistance. Examination for T2DM, such as fasting blood glucose, 2-hour postprandial blood glucose, or random blood glucose test, can be done occasionally. Serum GAD65 is an important factor in the pathogenesis of DMT1 which can attenuate pancreatic cell function. High serum GAD65 in asymptomatic patients with diabetes may be an indication of early onset of DMT. GAD65 is a potential serologic protein biomarker for detecting the incidence of pre-diabetes in patients, especially in the younger population, and a promising target for developing clinical diagnostic factors and other markers such as islet cell antibody (ICA) and insulin autoantibody (IAA/I-A2). Early detection of T1DM using rapid lateral flow immunoassay method for tyrosine phosphatase-like protein IA-2 (IA-2As) and GAD65 autoantibody by electrochemiluminescence assay was found to be a rapid, sensitive, and specific test for the prevention of T1DM) (Aulanni'am et al., 2022).

The fourth question was asked by patient's parents, initial VRF aged 12 years old. The patients were once had Diabetic Ketoacidosis (DKA) with an initial weight was 25 kg and height of 140 cm. Three months after DKA, HbA1C was 4%. Six months after DKA, the patient HbA1C was 6,1% and gaining weight into 33 kg. Patient routinely using Insulin (3 IU Novorapid and 6 IU Levemir). The patient's parents were asking whether the first 6 months after DKA was still in honeymoon period and is there any possibility of recurrence. The speaker explained that the honeymoon period duration was varied in every child. Autoimmune mechanism induces permanent beta pancreatic cell destruction. It was not possible to fall into honeymoon period twice. Parents was advised to keep giving insulin administration and minimize the insulin's dose. In some cases there may be an extension of the honeymoon phase but no specific genetic factors have been shown to have an effect (Thewjitcharoen et al., 2021).

The fifth question came from patient's parents, initial A who already had T1DM since 2020. They are asking if the child vomited, what medicine should be taken for the patient. The parents were also asking any tips or techniques to encourage the children who have become reluctant to inject insulin daily. The speaker answered that the causes of vomiting was varied and can become an early emergency symptom of DKA. Another sign of DKA was Kusmaull breathing (deep and fast breathing) or blood glucose level over 500 mg/dL. The management principles of DKA include fluid therapy to correct dehydration and stabilize circulatory function, administer insulin to stop excessive ketone body production, treat electrolyte imbalances, treat precipitating factors or underlying disease, and monitor therapeutic complications (Tridjaya et al., 2015). Therefore, it's necessary to immediately referred to the nearest hospital. The speaker also answered that the causes

of children become lazy for getting the daily injection was due to the pain, psychological factors, or another disease. Therefore, it's important to explore what causes children's reluctant getting the injection.

The last question came from the parents of patient with the initials M. He asked whether coronary heart disease (CHD) is a common thing in DM patients and what complications frequently followed. The speaker explained that in diabetic conditions, even when the blood glucose level was high, the body unable to use it. Therefore, fat storage was used. In the acute phase, complications result in diabetic ketoacidosis. While in the late phase, a rise in Triglycerides leads to dyslipidemia. Fat was often stored in adipose tissue and the endothelium of blood arteries. If this process is affecting blood vessel in the brain, it will cause a stroke. This process takes a long time and irreversible. Blood vessels will become rigid and narrow. CHD will not manifest until patient entering adolescence or 10 years later. The incidence of CHD in children who have been diagnosed with type 1 DM is 1-10% per patient per year. The risk of CHD in this group increases in children with poor metabolic control, previous history of CHD, children who do not use insulin, adolescent or peripubertal girls, children with eating disorders, low socioeconomic status (Tridjaya et al., 2015). To prevent this, patient need to do monitoring of blood glucose, HbA1C, and glycan protein.

The question-and-answer session ended smooth and participants were satisfied with the answers given. A group photo session was conducted and coordinated by the committee. Then the event was ended with a prayer by the committee. Souvenirs was given to the registered participants in the form of internet quota which was done virtually through the cell phone numbers. With the hope that the internet quota provided can be utilized by participants to seek knowledge and adding new insight about Diabetes Mellitus.

Describe the significance of your findings. Consider the most important part of your paper. Do not be verbose or repetitive, be concise and make your points clearly. Follow a logical stream of thought; in general, interpret and discuss the significance of your findings in the same sequence you described them in your results section. Use the present verb tense, especially for established facts; however, refer to specific works or prior studies in the past tense. If needed, use subheadings to help organize your discussion or to categorize your interpretations into themes. The content of the discussion section includes: the explanation of results, references to previous research, deduction, and hypothesis.

5. CONCLUSION

Community service was done smoothly and participants actively contributed in each session. Suggestions for further community service, participant can be divided into several breakout rooms, with a several physicians accompanying, allowing for a more in-depth QnA and sharing session with the participants.

6. REFERENCES

Aulanni'am, A., Wuragil, D., Susanto, H., Herawati, A., Nugroho, Y., & Laili Fajri, W. et al. (2022). The early detection of type 1 diabetes mellitus and latent autoimmune diabetes in adults (LADA) through rapid test reverse-flow immunochromatography for glutamic acid decarboxylase 65 kDa (GAD65). *Heliyon*, *8*(1), e08695. doi: 10.1016/j.heliyon.2021.e08695

Chowdhury, S. (2015). Puberty and type 1 diabetes. *Indian Journal Of Endocrinology And Metabolism*, *19*(7), 51. doi: 10.4103/2230-8210.155402

Cui K, Han Z. Association between disaster experience and quality of life: the mediating role of disaster risk perception. Qual Life Res [Internet]. 2019;28(2):509–13. Available from: http://dx.doi.org/10.1007/s11136-018- 2011-4

Data Rekam Medik Instalasi Rawat Jalan RSUD Dr Soetomo. 2020.

Delamater, A. M. 2006. Improving Patient Adherence. Clinical Diabetes, Vol. 24, No. 2, p. 71-77.

Duan L, Zhu G. Psychological interventions for people

affected by the COVID-19 epidemic. The lancet Psychiatry. 2020;7(April):300–2.

Dube A, Moffatt M, Davison C, Bartels S. Health Outcomes for Children in Haiti since the 2010 Earthquake: A Systematic Review. Prehosp Disaster Med. 2018;33(1):77–88.

Hood, A. K. K., Peterson, C. M., Rohan, J. M., & Drotar, D. 2009. Association Between Adherence and Glycemic Control in Pediatric Type 1 Diabetes : A Meta-analysis. Pediatrics, Vol. 124, No. 6, p. 1171–1179.

Milla Valta, Ahmad Mahfud, Tyyne Viisanen, Emmi Lennam et al. Type 1 Diabetes linked PTPN22 gene polymorphism is associated with the frequency of circulating regulatory T cells. European Jurnal of Immunology. 2020. 50: 581–588.

Papanikolaou V, Adamis D, Kyriopoulos J. Long term quality of life after a wildfire disaster in a rural part Greece. Open J Psychiatry. 2012;02(02):164–70.

Perling MA, Weinzimer SA, dan Tamborlane WV, 2008. Diabetes mellitus. In: Sperling MA(ed). Pediatric Endocrinology, 2nd ed. Philadelphia: Saunders, pp 374-421. In.
11. WHO. 2020. Mempertahankan layanan kesehatan esensial: panduan operasional untuk konteks COVID-19 https://www.who.int/docs/default-source/searo/indonesia/covid19/maintaining-essential-health-services --ind.pdf?sfvrsn=d8bbc480_2

Kakkar J, Puri S. Psychosocial implications of type 1 diabetes mellitus among children in India: an emerging challenge for social work profession. Open J Psychiatry Allied Sci. 2016;7(2):103.

Kretchy IA, Asiedu-Danso M, Kretchy JP. Medication management and adherence during the COVID-19 pandemic: Perspectives and experiences from low-and middle-income countries. Research in Social and Administrative Pharmacy. 2021. 17(1): 2023–2026.

Renukuntla VS, Hassan K, Wheat S, Heptulla RA. Disaster preparedness in pediatric type 1 diabetes mellitus. Pediatrics. 2009;124(5).

Schweiger, B., Snell-Bergeon, J., Roman, R., McFann, K., & Klingensmith, G. (2011). Menarche delay and menstrual irregularities persist in adolescents with type 1 diabetes. *Reproductive Biology And Endocrinology*, *9*(1), 61. doi: 10.1186/1477-7827-9-61

Shieh V, Huang JJ, Wu TEG, Chiu JY, Chen YC, Lin G, et al. Rate of psychiatric disorders and associations with quality of life among community members following the Kaohsiung gas explosion: An 18-month cross- sectional follow-up study. Health Qual Life Outcomes. 2019;17(1):1–10.

Thewjitcharoen, Y., Wanothayaroj, E., Jaita, H., Nakasatien, S., Butadej, S., & Khurana, I. et al. (2021). Prolonged Honeymoon Period in a Thai Patient with Adult-Onset Type 1 Diabetes Mellitus. *Case Reports In Endocrinology*, *2021*, 1-6. doi: 10.1155/2021/3511281

Tridjaya, B., Prita Yati, N., Faizi, M., Sacharina Marzuki, A., Giri Moelyo, A., & Soesanti, F. (2015). *Konsensus Nasional Pengelolaan Diabetes Melliitus Tipe-1* (3rd ed., p. 59). Jakarta: Badan Penerbit Ikatan Dokter Anak Indonesia.

Velavan TP, Meyer CG. The COVID-19 epidemic. Trop Med Int Heal. 2020;25(3):278–80.

Empowerment of Diabetes Mellitus Patient during COVID-19 Pandemic Era Through Online Gathering

ORIGINALITY REPORT

13%	10%	9%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

MATCHED SOURCE

1	repo.stikesicme-jbg.ac.id Internet Source	3%

3%

★ repo.stikesicme-jbg.ac.id

Internet Source

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		

Empowerment of Diabetes Mellitus Patient during COVID-19 Pandemic Era Through Online Gathering

GRADEMARK REPORT

FINAL GRADE

/100

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7