Coronavirus disease (Covid-19): How does the exercise practice in active people with type 1 diabetes change? A preliminary survey - Roberta Assaloni - AAS2 Bassa Friulana-Isontina, Italy

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Abstract

Aims: Coronavirus disease (Covid-19) could lead persons with pre-existing medical condi- tions to severe respiratory infections. The Italian Government introduced quarantine to limit viral transmission. This measure could lead people with type 1 diabetes (PWT1D) to disrupt daily care routine including PA practice with difficulties in glycemia management. This study aims to explore PA level in PWT1D before and during quarantine and to describe variation in glycemia values.

Methods: An online survey investigating medical factors and the perceived and PA level in pre-established period before and after the introduction of quarantine was developed. Comparison between pre and post quarantine was assessed by Wilcoxon Signed Ranks test for continuous variables.

Results: A total of 154 subjects satisfied the eligibility criteria (54.5% males, 44.8 ± 12.5 years). We found a decrease of PA level (Godin Scale Score 25 ± 1.7vs38.6 ± 1.7 points), steps number and minutes of exercise (respectively 12.606 ± 5026vs4.760 ± 3.145 and 66±4 vs 38

±3) and an increase of glycemia values (142.1 ± 25.4 mg/dLvs150.8 ± 29.4 mg/dL). *Conclusions:* PWT1D reported a decrease in exercise and worst glycemia. Although PWT1D tried to remain active, their PA level

was inadequate to prevent glycemia rising. The diffi-cult to maintain a glycemic control could expose patients to diabetes complications and to an higher risk to counteract infections. The on-going Coronavirus disease (Covid-19), an acute infec- tious respiratory that could lead to a severe pneumonia till to death, has become the world's leading health headline causing public concerns [1,2]. On January 30, 2020, the World Health Organization (WHO) declared that the new coron- avirus outbreak is a public health emergency [3]. Further, on February 22, 2020, the Covid-19 expanded in Italy causing the largest and deadly epidemic in the Country [4]. WHO warned that the most at-risk populations are older and peo- ple with pre-existing medical conditions such as high blood pressure, heart disease, lung disease, cancer and diabetes [5]. In particular, people with type 1 (PWT1D) and poor glucose control, in particular high glycated hemoglobin (HbA1c) or/ and insulin resistance, showed higher risk to counteract infections due to the impaired body immune response, this also holds true with Covid-19 [6,7]. For this reason, PWT1D should manage blood glucose levels with frequent glycemia controls and subsequent insulin delivery adaptations and improving their life style to prevent serious illness [8]. More- over, it seems that the routine care of diabetes that included also diet and physical activity (PA) were disrupted during the current pandemic, these may contribute to worsening outcomes [9–11]. In accordance to Istituto Superiore della Sanita` (ISS), the

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Italian Government implemented extraordi- nary measures to limit viral transmission throughout people and the territory, imposed national quarantine, reduced social interaction and travelling and ''stay at home" as a basic means of limiting people's exposure to the virus [12]. Unfortu- nately, the mandated restrictions on travel and on participat- ing in outdoor activities, including regular PA and exercise, inevitably disrupted the daily routine activities of millions of people [13,14]. Although containing the virus spread remains a priority, it is also necessary to act on multiple aspects of public health. Unfortunately, few public health guidelines for the public in terms of maintaining daily exer- cise or PA routines were developed [15]. PWT1D have been advised to follow general guidance on risk reduction, includ- ing social distancing and were emphasized the importance of good glycemic control. The major strategies to control gly- caemia levels and reduce the risk of hyper or hypoglycemia are: more frequent blood glucose monitoring, diet and maintain the regular practice of PA . The Covid-19 pandemic is considered the worst public health concern in the last decades that resulted the largest and severest measures to contrast the diffusion of the disease [2]. People of all ages risk to counteract this virus but the most at-risk populations are older and people with pre-existing medical conditions such as diabetes [5]. People with uncon- trolled type 1 diabetes showed higher risk to get infections so they should manage blood glucose levels as close as possi- ble to their goal to prevent serious complications related to the disease such as onset and progression of microvascular (neuropathy, nephropathy and retinopathy) and macrovascu- lar complications [6]. The movement limitations imposed by Italian Government created difficulties to patients in main- taining routine care with limitation of option of PA and more complex management of diabetes [8,15]. In our study, PWT1D reported a significant decrease both perceived and measured PA level and an increase of glycemia values during the national quarantine. In particular, more than 42% of patients reported a worst perceived of metabolic compensation and more than 62% of patients underlined a worst glycemia man- agement and the necessity to modified insulin delivery.

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