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Eating habits, physical health and lifestyle changes during the COVID-19 lockdown: comparison between Hungarian and Jordanian female workers

Étkezési szokások, fizikai egészség és életmódváltozások a COVID-19 lezárás alatt: összehasonlító vizsgálat magyar és a jordániai női munkavállalók között

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Abstract: Introduction: The COVID-19 pandemic prompted prolonged lockdowns in Jordan and Hungary from March 2020, aiming to curb the virus's spread. Due to distinct cultural backgrounds, this study explores variations in the impact of confinement on female workers in both countries.

Aims: Through a questionnaire survey, the research examines pre, during, and post-lockdown habits of female employees, encompassing work patterns, diet, physical activity, and family responsibilities, aiming to identify cultural differences.

Results: Notable differences emerged in lockdown homework engagement (62% Hungary, 81% Jordan), remote work intensity (40% Hungary, 83% Jordan), and partner-shared responsibilities. Hungarian women exhibited higher physical activity levels and fewer changes in eating habits, with only 28% reporting weight gain, in contrast to 67% of Jordanian women. The average body mass index for Hungarians is 25.1 ± 4.8 kg/m², while Jordanians have 21.6 ± 3.0 kg/m².

Conclusion: The study underscores the role of physical activity in overcoming pandemic challenges. Promoting regular exercise for women in both countries is crucial, requiring enhanced motivation and opportunities, even amid potential future epidemics.

Keywords: COVID-19, physical activity, lifestyle change, lockdown, eating, women's health.

Absztrakt: Bevezetés: A COVID-19 járvány miatt Jordániában és Magyarországon 2020 márciusától hosszú időn keresztül szigorú zárlati eljárásokat vezettek be a fertőzés terjedésének megakadályozására. Mivel a két ország hagyományai és szokásai eltérőek, felmerült a kérdés, hogy a bezártság a két ország női munkavállalóira eltérő módon hatott-e.

Célok: Kérdőíves vizsgálat alapján megismerni a női munkavállalók zárlat előtti, alatti, és utáni szokásaikat (munkamód, étkezés, fizikai aktivitás családi munkamegosztás stb), és ezek változását a két ország összehasonlításában.

Eredmények: Szignifikáns különbség volt abban, hogy a zárlat alatt dolgoztak-e (Magyarországon 62% Jordániában, 81%), az otthoni munka mennyiségében (Magyarországon 40, Jordániában 83%), a partnerrel való munkamegosztásban. A magyar nők fizikailag aktívabbak voltak a járvány idején, mint a jordániaiak, és étkezési szokásaik kevésbé változtak. Ez abban is megmutatkozik, hogy mindössze 28%-uk testömege növekedett, szemben a jordániai nők 67%-ával. Jelenleg a testtömeg-index átlaguk is magasabb a magyaroknál ($25,1 \pm 4,8$ kg/m² versus $21,6 \pm 3,0$ kg/m²). Következtetés: Ez a kutatás is rávilágított a fizikai aktivitás fontosságára, amely pozitívan hat a járvány okozta nehézségek leküzdésére. Mindkét országban erősíteni kell a nők rendszeres mozgásra való motivációját, és lehetőséget kell teremteni erre, akár járvány idején is.

Kulcsszavak: COVID-19, fizikai aktivitás, életmódváltás, karantén, étkezés, nők egészsége

Introduction

On December 2019, new coronavirus (SARS-Cov2) emerged in Wuhan, China, spreading a pandemic of acute respiratory syndrome in humans (COVID-19). The COVID-19 pandemic has represented a massive impact on human health, causing sudden lifestyle changes as a result of public health recommendations and governmental measures during the pandemic which are numerous restrictions on daily living including social distancing, isolation and home confinement (Ammar et al., 2020). Such confinements like these resulted in negative impacts by constraining interest in typical regular exercises, physical activity, travel and access to numerous forms of workout (e.g., closed exercise centers, inhibited group social occasions, expanded social separation) (Hossain et al., 2020).

In addition, these measures imposed a burden on population health by potentially limiting physical fitness, which is positively associated with the ability to cope with infections and the immunologic and cardiopulmonary complications of more severe illnesses (Bloch et al., 2020; Steinacker et al., 2020). While these restrictions' goal was mainly to reduce COVID-19 infection, it had caused other negative mental and physical health issues to female employees who had to look after their family by doubling the responsibilities on housework resulted by staying most of time at home, causing more stress and unusual duties on them. Researches reveal that the pandemic has caused women to dedicate more time to childcare and homeschooling duties, while males have been mostly unaffected (Andersen et al., 2020).



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In this study, we use critical gender theory as the foundation of our theoretical framework, where gender is defined as a socially constructed definition of biological sex, with cultural ideals and social institutions shaping the dos and don'ts of masculinity and femininity. Due to lifestyle and tradition differences between Jordan and Hungary, the effect of these restrictions on can be dissimilar between the two populations, thus the health outcomes that determined by the impact of social interventions can be different.

Literature Review

Due to COVID-19 spread globally countries around the world were forced to take a number of precautionary measures in order to reduce infection rates and, as a result, „flatten the curve.“ All public venues, including cinemas, gyms, and restaurants, were shut down as part of the lockdown. Unfortunately, following the government's self-quarantine guidelines had a significant influence on mental and physical health (García Ron & Cuéllar-Flores, 2020). According to previous studies, lockdown has been linked to a significant increase in the occurrence of mental health issues such as sadness, anxiety, and stress (Salari et al., 2020). No doubted that mentioned factors can all contribute to negative outcome on physical health as well. Worldwide, physical inactivity and poor mental health are among the leading risk factors for major disease morbidity worldwide (Hallal et al., 2012). This is true not only for the general population, but also for older persons and chronically ill patients, who are more vulnerable to COVID-19-related mortality. Physical activity is directly linked to school-related activities, active transportation, and engagement in sports for children and adolescents (Hoffmann et al., 2019). In addition, because schools have been closed due to the COVID-19 epidemic, physical activity participation has been hampered, raising the risk of long-term sedentary behavior. Moreover, in March 2020, the Jordanian and Hungarian governments decided to impose more stringent containment measures, including a ban on mass gatherings and events, as well as a ban on meeting for no reason, a ban on leaving for education and some specific jobs, and a reduction in the number of employees across the country. Despite the fact that the number of cases in the two populations indicated were not as high in the first two months; March- May 2020 compared to other nations with thousands of cases (WHO, 2022), there was a strict lockdown. As a result, there has been a significant drop in any type of socialization, as well as a sudden and radical change in the behaviors and lifestyles of the population. Physical separation and isolation have a significant impact on individuals' life, particularly on eating patterns and day-to-day activities, all of the mentioned factors have influenced children, students, employees and housewives' lifestyle. The lockdown led to two major impacts: First, staying at home incorporated digital-education, smart working, confinement of outside and in-gym physical movement. Second, there was stockpiling of food, due to the limitation in basic supply shopping. Furthermore, the interference of the work schedule caused by the isolate result in boredom, which in turn was associated with greater energy intake(Zentner et al., 2015). In addition to boredom, hearing or perusing persistently about the COVID-19 from media was unpleasant. Stress leads individuals to overeat, particularly 'comfort foods' rich in sugar, characterized as "food craving" (Ma et al., 2017; Yilmaz & Gökmen, 2020).

The impact of the COVID-19 pandemic's lockdown was specifically significant on women. As previously mentioned, the closure of schools and day care centers has significantly increased childcare responsibilities, resulting in parents' dividing of labor at home. According to recent reports, the boundaries between work and family became blurred, and the distribution of responsibilities became more apparent (Alon et al., 2020; Cui et al., 2020). Working women typically faced increased responsibilities as primary caregivers and employees who needed to work from home. Previously referred to as the „double burden“ or „second shift,“ this resulted in an overwhelming demand from both family and work (Hochschild & Machung, 2012). No doubt that all of the mentioned circumstances have distracted women to take care of their own health, dietary intakes and physical activity. In addition, according to a study, having kids/children appears to be one of the most important predictors of how the pandemic impact is perceived (Murat Yildirim & Eslen-Ziya, 2020). Moreover, one theory is that the lockdown forced working women to prioritize care-taking responsibilities in accordance with ‚cultural beliefs of the good mother,‘ thereby reinforcing traditional gender roles at home (Collins et al., 2020; Sutherland, 2010), therefore, they might be experiencing a reduction in productivity regarding to their job while working from home.

Inactivity prevalence is high among adults and children/adolescents in Middle Eastern nations, studies indicate that it is greater among women(Sharara et al., 2018). Although the prevalence of physical inactivity which defined as performing less than 600 MET-minute per week, exceeded 40% in all Arab countries, it was only (5%) in Jordan comparing it with Saudi Arabia which reached 68% and 87% in Sudan (World Health Organization, 2012). However, by 2021, obesity rate in Jordan reached 43.1% and 28.2% among women and men respectively, while in Hungary obesity percentage among women reached 24.6% and 28.2% for men (Global Obesity Observatory, 2019). Previous numbers indicates that women physical activity, eating habits and lifestyle in Hungary might be more proper than in Jordan; this may be refer to conservative traditions, cultural norms, and beliefs regarding illness and recovery that may contribute to low levels of Physical Activity PA among the general population(Barghouti et al., 2015). Additionally, in studies conducted in Saudi Arabia, Egypt, and Jordan, many parents in the region appear to prioritize educational and spiritual activities over physical activities for their children. Friends, peers, and even teachers have shown a lack of enthusiasm for physical activity(Musaiger et al., 2013). Another culturally unique element is gender constraints: even where exercise facilities are accessible, as they are in the region's more affluent countries, accessibility is a challenge, especially for women (Sharara et al., 2018).

Similarly, Hungary has the highest obesity rate in Europe researches have proved that Hungarians lead physically active lives. However, the obesity issues that exist in parallel with population's active lifestyles highlight the necessity to look at additional risk factors (particularly food choices) in addition to physical exercise (Kim et al., 2020). According to Hungary Physical Activity Factsheet, it shows that (84.6 %) of women aged (18-64 years) reached the recommended physical activity levels in comparison with (86.2%) men for same aspect (WHO, 2009). Another study shows that 60.7%

of the female population and 61.3% of the male population were classified as high physical activity while only 7.7% of men and 5.7% of women were classified as low physical activity category. Thus, there was no noticeable difference between men and women (Makai et al., 2016).

According to previous studies, women with low perceived life stress showed no relationships between physiological stress markers and the drive to eat, while women with high perceived life stress showed greater stress-induced cortisol responses and cardiovascular responses which is specifically positively associated with the drive to eat (Klatzkin et al., 2019). In Jordan, when women have children and caring responsibilities at home, inequality in tasks within the households becomes even more pronounced. This double burden is one of the barriers to achieving work-life balance and causes stress. A study showed that those women who did have work experience, indicated childbirth or marriage as the reasons for leaving work, same study showed that respondents spend on average of 4-6 hours a day on household chores, and does not have an active social life, mentioned declarations report calls on policymakers to enhance women's work-related legislation and conditions (Mehtap, 2016).

In Hungary, legally according to European Commission legislation, women and men equally share care tasks in the family as well as tasks relating to all aspects of household work thus it is believed that there is more equal share of domestic responsibilities between partners, consequently working women are less likely to accept traditional gender arrangements that are disadvantageous for them (European Commission, 2012). Hence, it is thought that the burden resulted from lockdown consequences on Hungarian working women were less likely to have an effect than on Jordanians. Thus, lockdown less likely to affect their health, behavior and lifestyle vigorously.

Goals and Methods

Our study aimed to investigate the immediate impact of the COVID-19 pandemic on eating habits, physical health and lifestyle changes among Hungarian and Jordanians female employees, and to compare with the two population as there are some differences in sociodemographic characteristics, type of living, traditions and daily life routine. Study design and participants

The study comprised a structured questionnaire packet via Google Form. It was sent to (181) Jordanian and Hungarian female from different cities between (23 January and 15 March 2022) The questionnaire was made available via online social media. The inclusion criteria for the study were Jordanian and Hungarian nationality female workers, wives and caregivers. from different cities, aged ≥ 18 years old. These criteria were verified by answers given to the corresponding survey questions.

Data Collection

The questionnaire consisted of questions that inquired demographic information (age, gender, place of residence, current employment); anthropometric data (reported weight and height); dietary habits information (adherence to traditional food, appetite change, snacks intake, food frequency), family structure data (having kids, living with the spouse), and questions that include lifestyle habits informa-

tion (house chores, sleep quality and physical activity) were taken from the International Physical Activity Questionnaire. Data on the frequency and the duration of low-intensity, moderate-intensity, and vigorous-intensity physical activity were collected as well through IPAQ questions. Total weekly physical activity was estimated by adding up the weekly time of each level of physical activity. Changes in eating habits and lifestyles were described as "decreased", "unchanged", or "increased" during the COVID-19 lockdown when compared to the pre-COVID-19 period.

Statistical Analysis

After completing the digital version of the questionnaire created using Google Forms, a total of 101 Jordanian and 80 Hungarian women completed the questionnaire and participated in the research.

The data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 25.0. (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0, IBM Corp., Armonk, NY, USA). The mean and standard deviation were estimated for numerical variables, as well as absolute numbers and percentage of the occurrence of answers for categorical variables. Pearson's chi-square test was used to investigate an association between two categorical variables. Student's t test was used to compare age and Body Mass Index between the two samples. The significance level was assumed to be $p < 0.050$.

Mean age for Jordanian participants is ($39,5 \pm 5,7$ years) and ($36,9 \pm 9,9$ years) for Hungarians, mean Body Mass Index ($\text{weight}/\text{height}^2$) and its standard deviation were calculated after height and weight were given, mean BMI was ($25,1 \pm 4,8$) and ($21,6 \pm 2,9$) for Jordanian and Hungarian participants respectively.

Results

Anthropometric data analysis

Jordanian participants of the present study presented significantly higher values of age and BMI and therefore more overweight has been noticed among Jordanians. In addition, significantly results shows that 67.3% of Jordanians have gained weight during lockdown while only 27.5% of Hungarians have gained weight in the same period. While 33.8% of Hungarians and 27.7% of Jordanians have maintained their weight. (Figure 1.)

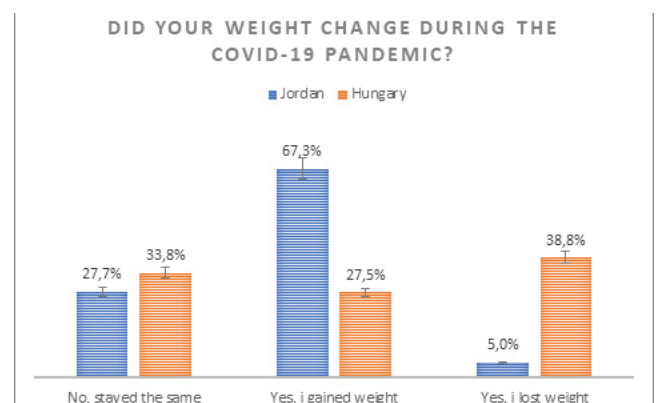


Figure 1. Weight change during the pandemic

Sociodemographic analysis

Similarly, 90% of both population participants have job and most of them are living with their spouses/partners. 85.1% Jordanian, 88.8% Hungarian couples are both working. In addition, according to previous studies workers without children reported being significantly less affected by the lockdown (Murat Yildirim & Eslen-Ziya, 2020). Therefore, having kids can be an important factor, results show significant difference; (88.1% of Jordanian are having kids while 67.5% of Hungarian participants have kids. (figure 2)

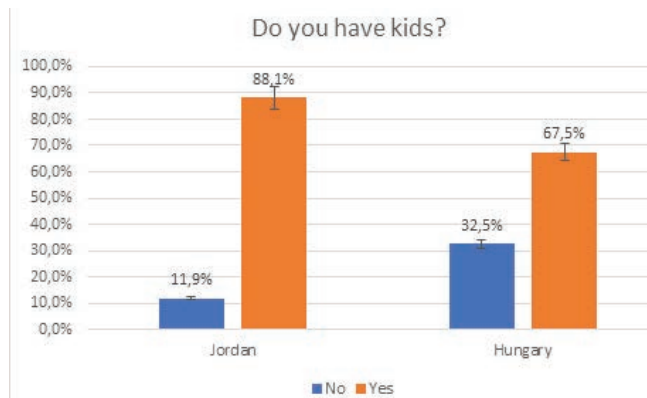


Figure 2. Family structure, having kids

Lifestyle change

High percentage of participants from both populations have altered their job online during confinement they reported that they had worked online under the lockdown (62% in Jordan, 81% in Hungary), almost half of them have reported that their spouses/partner have altered their job to online/ home control jobs as well, according to results it is believed that both populations participants had extra housework responsibilities and there was a need to manage it with their partners.

Jordanian women reported being affected at greater rates in terms of their routines in childcare and house chores, 60.4% of them had to do house responsibilities by their own, while 82.5% of Hungarian participants have claimed that they managed to split responsibilities with their partners, these percentages results are supporting the negative impact on mental and physical health on Jordanian wives and caregivers. Moreover, in comparison to what it was before to the lockdown, 50.5% of Jordanian participants agreed that their contribution for house duties during lockdown took up more from their time, whereas only 13.8% of Hungarian participants reported that housework required more effort and time when compared to the regular circumstances prior to the lockdown (figure 6.). Concerning sleep patterns, no significant difference between two population, 56.4% of Jordanians and 60% of Hungarians had the same sleeping patterns which they had before confinement.

Physical activity and eating habits change

With regard to physical activity, generally Hungarian respondents have more frequency of vigorous and moderate trainings in their routine in comparison with Jordanians according to questionnaire queries. Besides, the same opportunity to participate in sports and regular physical acti-

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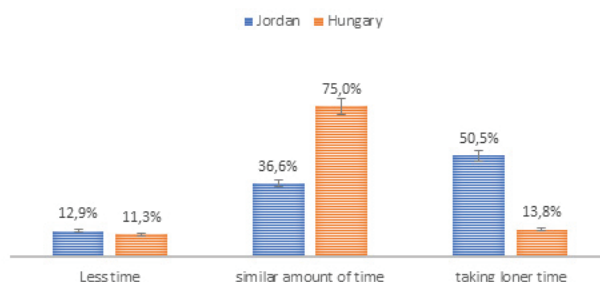


Figure 6. Change in house chores effort

vity as before the lockdown for Jordanians was remarkably less, 71.3% had less chance to engage their self with regular exercising while only 35% of Hungarians had less chance for doing regular sports. (Figure 7.)

Regarding to eating habits, 50% of the Jordanian participants felt a change in their hunger/satiety perception: 47.5% had more appetite. Whereas 70% of Hungarians didn't feel any change with their appetite (Figure 8.). Similarly, a significant difference appears regarding to snacks consumptions change, 50.5% of Jordanians have increased their snacks consumptions when compared to Hungarians: 26.3% increased their snacks, 71.3% had the same consumption and only 2.5% decreased their snacks (Figure 8.). Mentioned results support previous studies which agree that changed work habits (suspension or online working), as opposed to unchanging work habits, and female gender, are linked to altered hunger, both adversely and positively (Di Renzo et al., 2020).

COMPARED TO WHAT IT WAS PRIOR TO OUTBREAK, YOUR CONTRIBUTION TO HOUSE CHORES ARE TAKING:

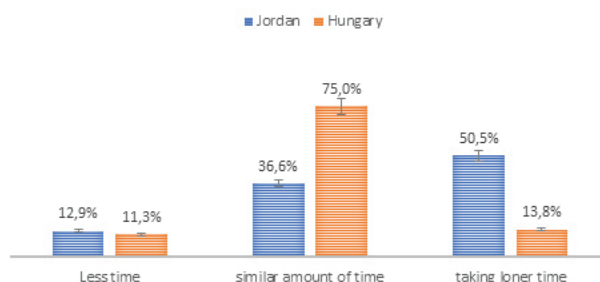


Figure 7. Opportunity for doing physical activity regularly before and during lockdown

Accomplishment from home

Responses revealed that Jordanian women are less satisfied with online/control job than Hungarian women. It indicates that satisfaction with the work and performance environment at home was less compared to Hungarians. Moreover, 63.4% of Jordanians consider that COVID-19 confinement is riskier for their life and health which makes remarkable difference compared with Hungarians with only 15%. (Figure 10.)

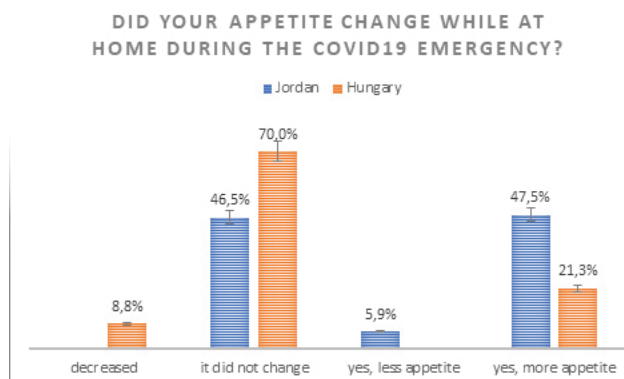


Figure 8. Appetite and eating habits change

Discussion

The study is to investigate the immediate impact of the COVID-19 lockdown on eating habits, physical activity and lifestyle changes among Jordanians and Hungarian. Our main investigation was to figure out if there was any difference in lockdown impact between both populations, researchers thoughts led to expect that traditions and society and different cultural background influence would make it a significant difference between Jordan and Hungary females.

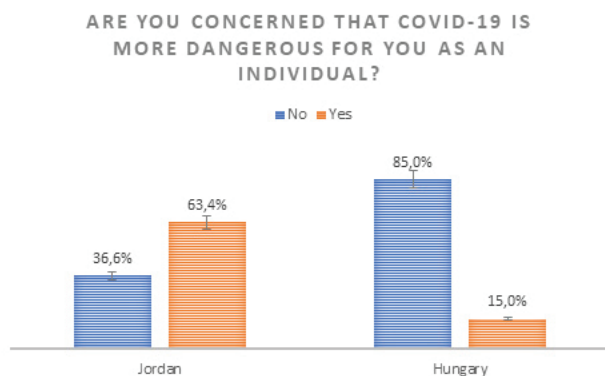


Figure 10. Participants opinion of lockdown circumstances effect on their life as individuals

Our findings based on participants responses shows that lifestyle of women from both populations have been contrastingly affected due to traditions, women role in the family, limits from society and lifestyle differences between Jordan and Hungary. Significantly Jordanians have been affected negatively more than Hungarians mentally and physically regardless they and their partners' job have been altered to control/online. These findings are greatly in line with the previous studies suggesting that during the pandemic working women had to prioritize care-taking duties to achieve the ,cultural beliefs of the ideal mother,' thereby reinforcing traditional gender roles at home (Collins et al., 2020; Sutherland, 2010). Therefore, having double duties from work and home as their family had to spend more time at home due to lockdown and social distancing restrictions.

In addition, among participants it shows that average Body Mass Index for Hungarians is significantly less than Jordanians. These findings lend a strong support to the fact that Hungarian females have less obesity rate if compared with Jordanian females (Global Obesity Observatory, 2019)7), this can be a reason that they tend to perform more proper physically active lifestyle due to less society traditions and

limits for women if set a side with Jordanians and Middle East in general (Sharara et al., 2018). In addition, it also refers to the fact that Jordanian culture has a significant impact on eating habits and food preferences thus it's possible that negative cultural influences on eating habits may exist (Bawadi et al., 2012). Interestingly, according to a study that was conducted by international research team examined people's eating habit among 190 countries, Hungary was among those eating the least healthy. However, the study revealed too that older people tend to eat healthier, and women generally eat more proper than men (Daily News Hungary, 2015).

Our results reveal that during the pandemic lockdown Jordanian women were more stressed due to double burden from home and work and they considered the lockdown restriction as risky for their mental and physical health, supporting recent researches which found that: stress leads individuals to overeat (Ma et al., 2017; Yılmaz & Gökmen, 2020) and that women with high perceived life stress showed greater stress-induced cortisol responses and cardiovascular responses which is specifically positively associated with the drive to eat (Klatzkin et al., 2019), thus it can be a distraction for them to eat and train properly.

Moreover, the fact that having kids/children appears to be one of the most important predictors of how the pandemic impact is perceived (Murat Yildirim & Eslen-Ziya, 2020) supports our observations from which shows that a high percentage from Jordanian respondents have kids in comparison with Hungarians, which make it a convenient reason that Jordanians have been more negatively affected by the pandemic. Another sociodemographic element was the presence of partners' support and collaboration; Jordanians were more dissatisfied than Hungarians when it came to managing household tasks and responsibilities, this is consistent with the fact that stress with previous studies that suggest perceived stress from job, role stress, and work-family conflicts, is related to reduced Physical Activity, also stress may affect exercise adoption, maintenance, and relapse in different ways (Stults-Kolehmainen & Sinha, 2014).

Our results agree with previous studies findings that showed a tendency for an increase in snacks consumption and over eating as a result of stress. Interestingly, the change was specifically among Jordanians, Hungarians showed less snacks consumption rise. Increased snacks consumption can justify the positive relationship with developing obesity. Bringing up this fact agrees that Jordanians' weight gain have also affected their sons/children eating pattern and weight change, the proof is that 32.7% in total of their children have gained weight. Therefore, here we confirm with previous studies which state that mothers' activity and eating habits might have an impact on their children (Østbye et al., 2013). Findings should be a reminder to parents that they are role models for their children. Besides, both population had almost the same answers regarding to their spouses' weight changes; Hungarians 28.8% and Jordanians 25.7% have revealed that their partners have gained weight.

Furthermore, it is common-sense knowledge that stress disturbs sleep. Upon that we expected a sleep pattern change possibility among both population as they had double responsibilities during lockdown. As there is evidence that supports a positive link between sleep loss and obesity and

drive to eat high caloric intake (Greer et al., 2013). Nevertheless, there was no significant difference between both populations' answers regarding to sleep pattern deprivation. The main limitation of our present study is that it is done upon self-reported questionnaire online by respondents without interference/interviews which can affect the reliability of the collected data, and the sample might be not representative for Jordanian and Hungarian women population. Besides, it was not conducted within the most critical period of lockdown. However, the strength here might be represented by the fact that it was done after many lockdown periods as it was fluctuating, thus it is believed that responses described the absolute effect of entire lockdowns from March 2020 until March 2022.

Conclusion

Our study revealed that while comparing the two population responses, Jordanian women are less satisfied with the lockdowns that have been caused by COVID-19 Pandemic among the two years (2020-2022), owing to the fact that most of them had changed their lifestyle and daily routine including their physical activity, eating habits, home responsibilities and work place. This change had reflected on their physical and mental health negatively; therefore, they considered that the lockdown caused by COVID-19 is more dangerous for their mental and physical health.

In addition, sociodemographic factors were also related to an unpleasant change in weight gain and stress load, such as having children and considering the fact that most of them have complained that they didn't find enough cooperation from their partners in home and childcare responsibilities. Hence, we recommend that it is necessary to include women in physical activities, leisure and recreational activities as an essential in their daily living to improve their health status. Inclusion can be done with social support from partners and society. Thus, this study can be used to design effective physical health support for women and families.

We give attention on food consumption, overeating and physical inactivity rise during lockdown, we encourage health authorities to take the necessary awareness measures for a healthier lifestyle during future pandemics as such they obliged social distancing and sticking at home restrictions which was associated with developing Non-Communicable Diseases, immunologic, cardiopulmonary complications of more severe illnesses among high percentage of populations, these illnesses and conditions have an influence on an individual's quality of life and are linked to rising health-care expenses, which create a financial burden on the government and businesses (Vandenbergh & Albrecht, 2020).

Further, our results showed mothers weight gain and health change have affected their children as well, we bring up that prevention of children and family members obesity is a necessity for a healthier and more productive population, we recommend that it starts from parental habits. we highlight the importance of parental rules that encourage physical exercise and good eating patterns as it completely correlated with their children's health and lifestyle.

Lastly, it is totally believed that going through stressful events and tough times can create fraught situation between partners and family members, stress can lead to physical inactivity and difficulty in exercising regularly. Hence, designing stress management programs with exercise intervention may inhabit stress-related reductions in Physical Acti-

vity, this can be achieved by including family members in recreational sports activities (indoor and outdoor sports), which in its role can improve their overall well-being and build strong family bonds. Also, our results draw attention to the importance of family cooperation and support in difficult circumstances such as during the pandemic, the more the partners understand each other the less adverse effects can occur.

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