

Back pain: An aftermath of Covid-19 pandemic? A Malta perspective

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Abstract

Background: Back pain is the commonest musculoskeletal complaint across the world. The Covid-19 pandemic led to mitigating measures including remote working that enhanced a sedentary lifestyle. The aim of this study was to investigate whether back pain complaints have increased from pre-Covid-19 to during the Covid-19 period among the adult population of Malta, while exploring the possible contributing factors.

Methods: An online survey was distributed through social media targeting the adult population of Malta. Questions on sociodemographic data, occurrence of back pain pre-Covid-19 and since the onset of Covid-19 was gathered, along with changes in behavioural attitudes, daily routine and physical activity. Descriptive and multiple logistic regression analyses were performed.

Results: Out of the 388 responders, 30% experienced chronic back pain pre-Covid-19, 49% experienced back pain since Covid-19, with the majority of the latter claiming that they never experienced back pain before Covid-19. Significant changes were present in daily routine and physical activity (PA) patterns. Indeed, continuously sitting down (OR: 15.53; $p \leq 0.01$), no PA (OR: 4.22; $p \leq <0.01$), once a week PA (OR: 5.74; $p \leq <0.01$), two to three times PA a week (OR: 2.58; $p = 0.05$) and four to five PA a week (OR: 3.46; $p = 0.02$) were associated with experiencing new onset back pain since the onset of Covid-19, when adjusted for sex, age, education and employment status.

Conclusion: The pandemic has changed population behaviour resulting in an enhanced back pain occurrence. This is anticipated to impact the individual's disability adjusted life years as well as increase the burden on the economy and healthcare services. A designated multidisciplinary action plan is recommended to reduce back pain impact.

KEYWORDS

back pain, Coronavirus, Malta, population health, prevention

1 | INTRODUCTION

Back pain, especially low back pain, is the commonest musculoskeletal complaint on a global level and is the leading cause of absenteeism from work (Driscoll et al., 2014; Hoy et al., 2012; Maher et al., 2017). Additionally, it is responsible for a substantial healthcare and economic burden (Hartvigsen et al., 2018). The small European county of Malta, with a total population of 442,413, is of no exception (National Statistics Office (NSO), 2020). In fact, it was reported that the commonest presenting complaint at primary healthcare was musculoskeletal (Cuschieri & Sammut, 2013). Indeed, the point prevalence of low back pain at a population level in 2015 for Malta was 6.4%, with a disability-adjusted life years (DALYs) of 716 per 100,000 (Cuschieri et al., 2020).

In 2020, like the rest of the world, Malta reported the first Covid-19 case on the 7th of March and declared a public health emergency soon after (Cuschieri, 2020). A number of mitigation measures were instituted, including shifting to remote working, social distancing, restrictions on number of people in gatherings and even lockdowns when it was medically appropriate (Cuschieri, 2020). This sudden imposed new lifestyle and restrictions are expected to leave an impact on the population's health and wellbeing. Considering the enhanced sedentary lifestyle experienced due to Covid-19, along with the already established high occurrence of pre-Covid-19 back pain in Malta, it is anticipated that back pain complaints will increase among the population. The aim of this study was to investigate whether back pain complaints have increased from pre-Covid-19 to Covid-19 periods among the adult population of Malta, while exploring the possible contributing factors.

2 | METHODS

An anonymous online survey was distributed on social media between the 6th to 20th April 2021, targeting the adult population of Malta. The social media posts were linked to an internet-based survey on Google forms. The survey was compiled after a literature review on the impact of Covid-19 on physical health including back pain. The authors deliberated on the literature content which was followed by the formulation of the survey which took approximately 5 min to complete. The survey consisted of multiple-choice questions focussing on the employment status, daily routine, physical activity patterns, occurrence of back pain pre-Covid-19 and since the onset of Covid-19. The occurrence of chronic back pain (>6 months duration) pre-Covid-19 was recorded (Patrick et al., 2014). Furthermore, socio-demographic data and changes in behavioural attitudes (tobacco smoking, alcohol consumption) and weight changes were gathered. The last section of the survey was targeted towards those reporting having experienced new onset low back pain since the start of the Covid-19 pandemic. This section included the 'Oswestry low back pain disability questionnaire', which is a scoring tool to measure the individual's permanent functional disability due to low back pain (Fairbank & Pynsent, 2000). The Oswestry low back pain disability questionnaire consists of 10

sections, each assessing the effect of low back pain on a different daily function. Each section scores between 0 (no disability) to 5 (very severe/disabling). The total score obtained is divided by 50 and multiplied by 100. The percentage is interpreted as follows: 0%–20% as minimal disability; 21%–40% as moderate disability; 41%–60% as severe disability; 61%–80% as crippled and 81%–100% as bed-bound or exaggerating of symptoms (Fairbank & Pynsent, 2000).

A back-translation process was performed in order to have an English and a Maltese version of the survey. Informed consent was obtained electronically when participants opted to participate in the survey. The University of Malta Research Ethics Committee granted ethical clearance for the conduction of this survey (ID: 7712_31012021).

The statistical software IBM SPSS (IBM Corp. Release 2012 Version 21) was used for quantitative data analyses. Descriptive analyses were presented through frequencies. Comparative analyses were conducted through the Chi Square test. Multivariate binary logistic regressions were performed with the occurrence of back pain since the onset of Covid-19 as the dependent variable and (i) Covid-19 daily routine; (ii) Covid-19 physical activity patterns; (iii) change in body weight since Covid-19; (iv) change in tobacco smoking habits and (v) change in alcohol consumption habits as the independent variables while adjusting for sex, age, education and employment. Only the significant associations will be reported. A p -value of ≤ 0.05 was considered as significant.

3 | RESULTS

A total of 388 participants responded, with a female predominance (74.48% CI95%: 69.91–78.57), although socio-demographically no significant differences were observed between males and females, as shown in Table 1. Since the onset of Covid-19, 48% (CI95%: 42.92–52.91) reported a shift to remote working while 17% (CI95%: 13.40–20.95) reported to have started to follow a roster-based schedule, with days at the office and days working from home.

Changes in behavioural attitudes (smoking and alcohol) were noted to be minimal. In fact, an increase in both tobacco smoking (6.96% CI95%: 4.79–9.97) and alcohol consumption (6.44% CI95%: 4.37–9.37) was reported by the minority of the participants. Conversely this was not the case for physical activity patterns, where a significant difference was present between pre-Covid-19 and since Covid-19 activity, as shown in Figure 1 ($p = <0.001$). Furthermore, 50% (CI95%: 45.22–55.31) reported to have increased in weight since the onset of Covid-19.

3.1 | Back pain cohort

Prior to the onset of Covid-19, 30% (CI95%: 25.22–34.84) of the participants reported having suffered chronic back pain (>6 months duration). Low back pain was the commonest reported (60% CI 95%: 49.84–69.00) and required pain killers (36% CI95%: 25.37–47.81).

TABLE 1 Socio-demographic characteristics of the study cohort

		Male (n = 99)	Female (n = 289)	Chi sq.
Age groups	18–19 years	14%	8%	0.68
	20–29 years	27%	26%	
	30–39 years	13%	16%	
	40–49 years	21%	22%	
	50–59 years	15%	18%	
	60–69 years	8%	10%	
	70–79 years	1%	1%	
	≥80 years	0%	0%	
Districts	Southern Harbour	11%	9%	0.59
	Northern Harbour	27%	27%	
	South Eastern	15%	13%	
	Western	21%	21%	
	Northern	19%	19%	
	Gozo	5%	11%	
Education	Up to secondary	8%	9%	0.21
	Up to sixth form	11%	20%	
	Undergraduate degree	37%	35%	
	Post-graduate degree	43%	36%	
Employment pre-Covid19	Employed	63%	67%	0.08
	Unemployed	1%	1%	
	Student	31%	20%	
	Retired	4%	8%	
	Stay at home	1%	4%	
Employment since Covid19	Employed	65%	65%	0.06
	Unemployed	1%	1%	
	Student	28%	19%	
	Retired	6%	9%	
	Stay at home	0%	5%	

Since the onset of Covid-19, a higher proportion of the participants (49% CI95%: 44.28–54.18) reported having experienced back pain. Out of which, 61% (CI95%: 50.68–71.20) reported low back pain and requiring pain killers to relief the pain (39% CI95%: 28.45–50.45). Of note, the majority of those reporting back pain since the onset of Covid-19 did not report having had previous chronic back pain (53.40% CI95%: 46.33–60.34). Furthermore, those reporting back pain since the onset of Covid-19 were employed working from home (51.83%; $p = 0.01$); reported to have increased in weight (56.02%; $p = 0.01$); sitting most of the time (43.93%; $p \leq 0.01$); did not perform any physical activity (26.18%; $p \leq 0.01$) and were most of the time confined to their home (68.59%; $p = 0.02$). Indeed, a significant change between employment status, daily routine and physical activity patters was observed pre- and since Covid-19 among the back pain cohort, as shown in Table 2.

The results of the Oswestry Disability Index showed that the majority of those reporting back pain since Covid-19 had minimal disability (72.41% CI95%: 64.61–79.06), while 23.45% (CI95%:17.26–31.01) had moderate disability.

3.2 | Associated factors for back pain since the onset of Covid-19

On multiple binary logistic regression analyses, those reporting continuously sitting down were associated with a 15-fold likelihood of experiencing back pain (OR: 15.53 CI95%: 3.38–70.48; $p \leq 0.01$) when compared to those reporting to be 'always moving round' and after adjusting for sex, age, education and employment. Similarly, those reporting not performing any physical activity (OR: 4.22;

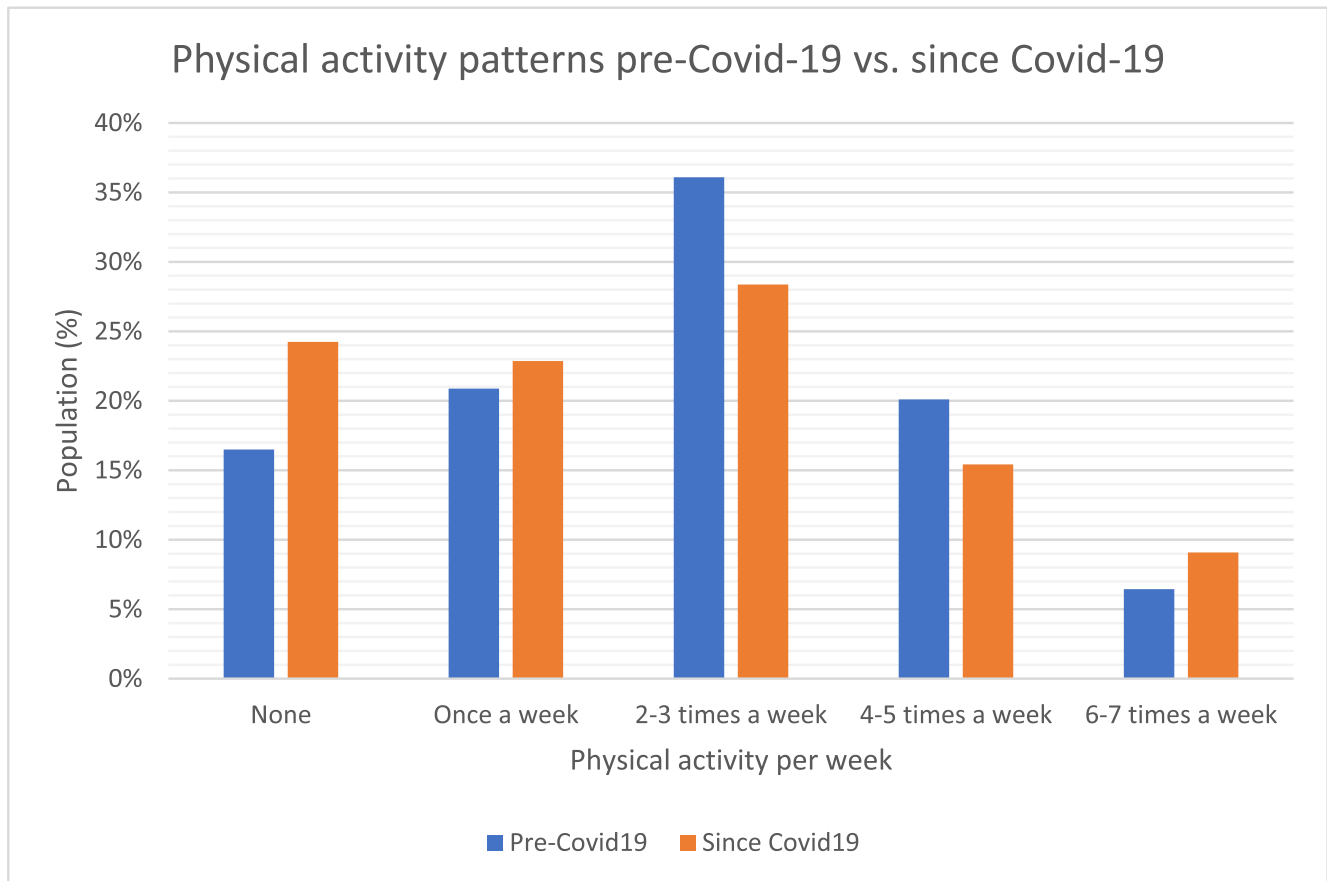


FIGURE 1 Comparisons between physical activity patterns pre-Covid-19 and since Covid-19 among the study population

		Back pain cohort		Chi sq.
		Pre-Covid-19	Since Covid-19	
	<i>n</i>	116	191	
	%	29.90%	49.23%	
Employment status	Employed	82.76%	67.54%	<0.001
	Unemployed	0.00%	1.05%	
	Student	8.62%	23.04%	
	Retired	6.03%	4.71%	
	Stay at home	2.59%	3.66%	
Daily routine	Always sitting	1.72%	20.42%	<0.001
	Sitting most of the time	28.45%	42.93%	
	Sitting and moving equally	34.48%	22.51%	
	Moving around most of the time	24.14%	11.52%	
	Always moving around	11.21%	2.62%	
Physical activity	None	23.28%	26.18%	<0.001
	Once a week	24.14%	25.13%	
	2-3 times a week	31.03%	23.56%	
	4-5 times a week	18.10%	14.66%	
	6-7 times a week	3.45%	3.66%	

TABLE 2 Comparisons between employment status, daily routine and physical activity patterns among the back pain cohort

CI95%: 1.57–11.33; $p \leq 0.01$); once a week activity (OR: 5.74; CI95%: 2.11–15.60; $p \leq 0.01$); two to three times weekly activity (OR: 2.58; CI95%: 0.97–6.82; $p = 0.05$) and four to five times weekly activity (OR: 3.46; CI95%: 1.22–9.76; $p = 0.02$) exhibited a higher chance of having back pain, when compared to those performing daily physical activity and adjusting for sex, age, education and employment.

4 | DISCUSSION

The Covid-19 pandemic has affected every aspect of life including the behaviour of populations and daily routines, especially with the instituted mitigation measures and lockdowns. It has been reported that those suffering from chronic back pain are more susceptible to experience back pain during periods of additional stressors such as Covid-19 (Fallon et al., 2020). Although this was not directly investigated in our study, it was clear that the majority were first timers experiencing back pain. Therefore, the possible reason for this enhanced back pain complaint could be originating due to imposed Covid-19 lifestyle changes. Indeed, a major shift to working from home, as observed in this study, took place all across Europe (European Commission, 2020). Although this had a positive effect with regards to containment of the viral spread, it had a negative impact, with enhanced sedentary lifestyles for a proportion of individuals. Indeed, it has been reported that prolonged periods of sitting down results in low lumbar muscles activation with transmission of load to passive structures (intervertebral discs and ligaments) with a consequential low back pain (Mörl & Bradl, 2013). This is supported by the highly significant relationship established in our study between continuously sitting down and back pain. This lifestyle change may be the leading contributor for the enhanced back pain complaints since the onset of Covid-19. Another potential reason is the lack of ergonomic office furniture available at home, which also can contribute to back pain (Gerding et al., 2021). The sedentary lifestyle and self-isolation linked with Covid-19 has been reported to be linked with increased weight gain and the risk of developing obesity (Bakaloudi et al., 2021; Cuschieri & Grech, 2020). In fact, a proportion of our study participants complaining of back pain reported to have increased in body weight. Increase in body mass index has been proven to be a risk factor for low back pain (Muthuri et al., 2020), which further supports our findings.

The literature on the effect of leisure physical activity on back pain is controversial, with some claiming a risk reduction for back pain, whilst others reported moderate risk for back pain (Heneweer et al., 2011; Shiri & Falah-Hassani, 2017). This study strongly links the relationship between lack or low levels of physical activity with back pain and brings forward the recommendation that physical activity should be encouraged even if confined to the home. Such activity will have a dual positive outcome, not only on decreasing potential back pain but also in helping to maintain a stable body weight while preventing associated conditions including obesity and diabetes.

Although it is still early days into the pandemic to assess the permanent disability attributed due to Covid-19 induced back pain,

up till a year into the pandemic it appears that low back pain has not yet contributed to high disability effect, according to the Oswestry Disability Index. However, further follow-up research is merited to evaluate the extent of this condition over longer periods of time.

4.1 | Study limitations

This observational survey was distributed through social media platforms targeting the adult residents of Malta. This kind of methodology limits participation to those registered to the various social media platforms used (Facebook and LinkedIn) and is subject to personal preference and intuition to participate. Furthermore, the survey is susceptible to self-reporting and recall bias. Since the survey was available on social media and anonymous data was gathered, individuals from anywhere across the world could participate and not picked up by the researchers. The survey was tested among the authors and their colleagues. These responses were not considered for the actual study. However, the survey was not pilot tested through social media due to the anticipation of a low response rate when the actual survey was launched.

4.2 | Implications to policy and practice

It is clear that since the onset of Covid-19, back pain occurrences have increased among the Malta population, especially new onset back pain. During pre-Covid-19, back pain was contributing to a large proportion of DALYs in Malta, indeed it ranked as the second leading cause of disease and disability (Cuschieri et al., 2020; Institute for Health Metrics and Evaluation (IHME), 2019). Therefore, the enhanced back pain occurrence since Covid-19 is anticipated to lead to a higher disability and population burden on the healthcare systems. This brings forward the recommendation that a back pain clinic at primary healthcare level should be set up, currently not available in Malta yet previously proposed (Cuschieri et al., 2014), to provide a multidisciplinary management care to these individuals.

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None

CONFLICTING INTERESTS

The Authors declare that there is no conflict of interest.

ETHICAL APPROVAL

The University of Malta Research Ethics Committee granted ethical clearance for the conduction of this survey (ID: 7712_31012021).

AUTHOR CONTRIBUTION

SC and SG formulated the survey, collected the data and analysed it. All authors contributed to the writing and reviewing of the article.

DATA AVAILABILITY STATEMENT

Data is available upon request.

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