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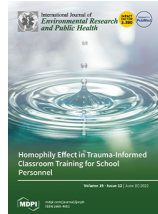
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articles



Cover Story ([view full-size image \(/files/uploaded/covers/ijerph/big_cover-ijerph-v19-i12.png\)](#)): Natural and human-made disasters can cause adverse childhood experiences (ACEs) that negatively affect youths' behavioral and mental health development. Most students experience at least one ACE in their lifetime. A national shortage of youth mental health professionals requires training others in trauma-informed classroom (TIC) practices to help students to cope with ACEs. Mental Health America-Greater Houston used a train-the-trainer model for school personnel to develop TIC practices. We tested if perceptions or knowledge of TIC training differed by facilitator (mental health experts vs. peer educators). No significant differences existed in selected Texan school staffs' perception or knowledge by trainer type. High-quality training helps schools and educators implement TIC practices to support youth coping with ACEs and other stressors. [View this paper \(https://www.mdpi.com/1660-4601/19/12/7104\)](https://www.mdpi.com/1660-4601/19/12/7104)

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A Review of the Respiratory Health Burden Attributable to Short-Term Exposure to Pollen (/1660-4601/19/12/7541)

by  [Nur Sabrina Idrose \(https://sciprofiles.com/profile/1370350\)](https://sciprofiles.com/profile/1370350),  [Caroline J. Lodge \(https://sciprofiles.com/profile/52850\)](https://sciprofiles.com/profile/52850),

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 [Dinh S. Bui \(https://sciprofiles.com/profile/1055519\)](https://sciprofiles.com/profile/1055519) and  [Shyamali C. Dharmage \(https://sciprofiles.com/profile/160903\)](https://sciprofiles.com/profile/160903)

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

Abstract Respiratory diseases such as asthma, allergic rhinitis (AR) and chronic obstructive pulmonary disease (COPD) affect millions worldwide and pose a significant global public health burden. Over the years, changes in land use and climate have increased pollen quantity, allergenicity and duration of the [...] [Read more](#).

(This article belongs to the Special Issue [Environmental Risk Factors, Allergic Diseases and Lung Health \(/journal/ijerph/special_issues/environment_lung_health\)](#))

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Emotional Intelligence as a Predictor of Motivation, Anxiety and Leadership in Athletes (/1660-4601/19/12/7521)

by  [Isabel Mercader Rubio \(https://sciprofiles.com/profile/1069060\)](https://sciprofiles.com/profile/1069060),  [Nieves Gutiérrez Ángel \(https://sciprofiles.com/profile/1923175\)](https://sciprofiles.com/profile/1923175),

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Abstract Nowadays, emotional intelligence is not only understood as the recognition of our own emotions but also the regulation of these emotions. In the field of sports, the concept of sports leadership is increasingly relevant, understood as a behavioral and cognitive process closely related [...] [Read more](#).

(This article belongs to the Special Issue [Emotional Intelligence, Active Lifestyle, and Other Associated Variables \(/journal/ijerph/special_issues/emotional_intelligence_active_lifestyle\)](#))


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

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Health Promotion Behaviors of Pregnant Couples in the COVID-19 Pandemic: Actor-Partner Interdependence Model (/1660-4601/19/12/7501)

by  [Sun Hee Kim](https://sciprofiles.com/profile/author/NFhZZERxZDB3ZEZZnMvUldLc3ZFeUdWREtZc0hWaGI0U1FMdjFYcWt1Zz0=) (<https://sciprofiles.com/profile/author/NFhZZERxZDB3ZEZZnMvUldLc3ZFeUdWREtZc0hWaGI0U1FMdjFYcWt1Zz0=>) and  [Hee Sun Kang](https://sciprofiles.com/profile/2133435) (<https://sciprofiles.com/profile/2133435>)

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Abstract Pregnancy during the pandemic may be a stressful life event. This cross-sectional study aimed to identify the actor and partner effects of the fear of COVID-19, depression, posttraumatic growth, and marital adjustment on the health promotion behaviors of pregnant couples during the COVID-19 [...] [Read more](#). (This article belongs to the Section [Health Behavior, Chronic Disease and Health Promotion](#) ([/journal/ijerph/sections/health_promotion](#)))





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Perceived Stigma of Patients Undergoing Treatment with Cannabis-Based Medicinal Products ([/1660-4601/19/12/7499](#))

by  [Lucy J. Troup](https://sciprofiles.com/profile/1687305) (<https://sciprofiles.com/profile/1687305>),  [Simon Erridge](https://sciprofiles.com/profile/1922324) (<https://sciprofiles.com/profile/1922324>),  [Beata Ciesluk](https://sciprofiles.com/profile/2289579) (<https://sciprofiles.com/profile/2289579>) and  [Mikael H. Sodergren](https://sciprofiles.com/profile/1736686) (<https://sciprofiles.com/profile/1736686>)

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Abstract Cannabis-based medicinal products (CBMPs) are prescribed with increasing frequency. This study aimed to investigate the perceived stigma attached to patients prescribed CBMPs in the UK to establish its prevalence. A qualitative survey was developed by an expert multidisciplinary group and data were collected [...] [Read more](#). (This article belongs to the Special Issue [Health Effects of Cannabis Use](#) ([/journal/ijerph/special_issues/Health_Cannabis](#)))

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

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Tobacco Use and Exposure to Environmental Tobacco Smoke amongst Pregnant Women in the United Arab Emirates: The Mutaba'ah Study ([/1660-4601/19/12/7498](#))

by  [Mohammed Nagdi Taha](https://sciprofiles.com/profile/author/SIFwRTBwQTEvUWM0UVg1bEh6OEEdKUEtHK2VTRmFnbVZQdStFZDdVeFJBS3VzSHZRRFIQWkJSSzIzaGNHVh) (<https://sciprofiles.com/profile/author/SIFwRTBwQTEvUWM0UVg1bEh6OEEdKUEtHK2VTRmFnbVZQdStFZDdVeFJBS3VzSHZRRFIQWkJSSzIzaGNHVh>),  [Zaki Al-Ghumgham](https://sciprofiles.com/profile/author/Q09IQ2RPVjZnNHAXb1FzRjVrThpMam54VnBveW5XYVZqdkp2RVRTOWtIjBETzYva0VmaFpYakF2c3hTak05Vw==) (<https://sciprofiles.com/profile/author/Q09IQ2RPVjZnNHAXb1FzRjVrThpMam54VnBveW5XYVZqdkp2RVRTOWtIjBETzYva0VmaFpYakF2c3hTak05Vw==>)

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Abstract Self-reported tobacco use is high in the male adult Emirati population (males ~36% vs. females ~3%); however, there are minimal data on tobacco use or exposure to environmental tobacco smoke (ETS) during pregnancy in the United Arab Emirates (UAE). This study investigated the [...] [Read more](#). (This article belongs to the Special Issue [Tobacco Smoke Exposure and Tobacco Product Use](#) ([/journal/ijerph/special_issues/Tobacco_Product](#)))











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The Impact of Charlson Comorbidity Index on the Functional Capacity of COVID-19 Survivors: A Prospective Cohort Study with One-Year Follow-Up ([/1660-4601/19/12/7473](#))

by  [Rodrigo Núñez-Cortés](https://sciprofiles.com/profile/2235642) (<https://sciprofiles.com/profile/2235642>),  [Constanza Malhue-Vidal](https://sciprofiles.com/profile/author/ZEk4dS9BT1g5T0xUbEVpeGhKNFpadz09) (<https://sciprofiles.com/profile/author/ZEk4dS9BT1g5T0xUbEVpeGhKNFpadz09>),  [Florencia Gath](https://sciprofiles.com/profile/author/K3A1bWc0RIZhRkxyUVcWdzFvZEI3eIBWQWZHekxtK3dVMFE1YUo1RVFQUT0=) (<https://sciprofiles.com/profile/author/K3A1bWc0RIZhRkxyUVcWdzFvZEI3eIBWQWZHekxtK3dVMFE1YUo1RVFQUT0=>),  [Gonzalo Valdivia-Lobos](https://sciprofiles.com/profile/2281253) (<https://sciprofiles.com/profile/2281253>),  [Rodrigo Torres-Castro](https://sciprofiles.com/profile/623693) (<https://sciprofiles.com/profile/623693>),  [Carlos Cruz-Montecinos](https://sciprofiles.com/profile/947401) (<https://sciprofiles.com/profile/947401>),  [Francisco M. Martínez-Arnau](https://sciprofiles.com/profile/570094) (<https://sciprofiles.com/profile/570094>),  [Sofía Pérez-Alenda](https://sciprofiles.com/profile/822211) (<https://sciprofiles.com/profile/822211>),  [Rubén López-Bueno](https://sciprofiles.com/profile/891662) (<https://sciprofiles.com/profile/891662>) and  [Joaquín Calatayud](https://sciprofiles.com/profile/1165962) (<https://sciprofiles.com/profile/1165962>)

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Abstract Objective: To determine the association between the Charlson comorbidity index (CCI) score after discharge with 6-min walk test (6MWT) 1 year after discharge in a cohort of COVID-19 survivors. Methods: In this prospective study, data were collected from a consecutive sample of patients [...] [Read more](#). (This article belongs to the Special Issue [Health-Related Behaviours during the COVID-19 Pandemic](#) ([/journal/ijerph/special_issues/health_behaviour_covid](#)))

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Medication Knowledge and Adherence in Type 2 Diabetes Mellitus Patients in Brunei Darussalam: A Pioneer Study in Brunei Darussalam ([/1660-4601/19/12/7470](#))

by  [Najwa Hazwani Muhammad Haskani](https://sciprofiles.com/profile/author/Y0JnWFN4dldSZUhhcjU0YlpadTh4aHpwYmJxSHdpU0pnSipMV0ViWFppYz0=) (<https://sciprofiles.com/profile/author/Y0JnWFN4dldSZUhhcjU0YlpadTh4aHpwYmJxSHdpU0pnSipMV0ViWFppYz0=>),  [Hui Poh Goh](https://sciprofiles.com/profile/1890550) (<https://sciprofiles.com/profile/1890550>),  [Daniel Vui Teck Wee](https://sciprofiles.com/profile/2274141) (<https://sciprofiles.com/profile/2274141>),  [Andi Hermansyah](https://sciprofiles.com/profile/2192131) (<https://sciprofiles.com/profile/2192131>),  [Khang Wen Goh](https://sciprofiles.com/profile/1992688) (<https://sciprofiles.com/profile/1992688>) and  [Long Chiau Ming](https://sciprofiles.com/profile/173167) (<https://sciprofiles.com/profile/173167>)

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Abstract Aim: The present study measured the medication knowledge and medication adherence in patients with type 2 diabetes in Brunei Darussalam. Demographic details and diabetes knowledge were also evaluated. Methods: A cross-sectional study conducted via the administration of a structured questionnaire consisting of 4 [...] [Read more](#). (This article belongs to the Special Issue [Assessment and Management of Lifestyle-Related Risk Factors for the Prevention and Management of Non-communicable Disease in Primary and Community Care](#) ([/journal/ijerph/special_issues/lifestyle-related_risks](#)))

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An Explanatory Model of the Relationships between Physical Activity, Social Support and Screen Time among Adolescents ([/1660-4601/19/12/7463](#))

by [Daniel Sanz-Martín](https://sciprofiles.com/profile/2152870) (<https://sciprofiles.com/profile/2152870>), [Eduardo Melguizo-Ibáñez](https://sciprofiles.com/profile/1391811) (<https://sciprofiles.com/profile/1391811>), [Germán Ruiz-Tendero](https://sciprofiles.com/profile/2616700) (<https://sciprofiles.com/profile/2616700>) and [José Luis Ubago-Jiménez](https://sciprofiles.com/profile/446640) (<https://sciprofiles.com/profile/446640>)

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Abstract Effective physical activity studies are necessary to understand how factors involved in physical activity mediate behaviour. Therefore, more reliable explanatory models can be generated in order to design effective actions to promote physical activity. The study had two aims: (1) to develop an [...] [Read more](#). (This article belongs to the Special Issue [Emotional Intelligence, Active Lifestyle, and Other Associated Variables](#) ([/journal/ijerph/special_issues/emotional_intelligence_active_lifestyle](#)))

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The Effect of Outdoor Environmental Exposure on Readmission Rates for Children and Adolescents with Asthma—A Systematic Review ([/1660-4601/19/12/7457](#))

by [Lisa Smaller](https://sciprofiles.com/profile/author/MVBxOGx3N2ZlYjJxdGdlakYyWjBZL3g2aElrLzk3S0NhT0MvSElRE1GOD0=) (<https://sciprofiles.com/profile/author/MVBxOGx3N2ZlYjJxdGdlakYyWjBZL3g2aElrLzk3S0NhT0MvSElRE1GOD0=>), [Mehak Batra](https://sciprofiles.com/profile/703670) (<https://sciprofiles.com/profile/703670>) and [Bircan Erbas](https://sciprofiles.com/profile/473343) (<https://sciprofiles.com/profile/473343>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7457; <https://doi.org/10.3390/ijerph19127457> (<https://doi.org/10.3390/ijerph19127457>) - 17 Jun 2022

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Abstract The burden of asthma readmission for children and adolescents is approximately 10% worldwide. Research has been synthesised for behavioural and indoor impacts; however, no such synthesis has been conducted for outdoor environmental exposures. This systematic review aims to evaluate and synthesise the impact [...] [Read more](#). (This article belongs to the Special Issue [Environmental Risk Factors, Allergic Diseases and Lung Health](#) ([/journal/ijerph/special_issues/environment_lung_health](#)))

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Assessment of Physical Fitness and Risk Factors for the Occurrence of the Frailty Syndrome among Social Welfare Homes' Residents over 60 Years of Age in Poland ([/1660-4601/19/12/7449](#))

by [Antonina Kaczorowska](https://sciprofiles.com/profile/2006389) (<https://sciprofiles.com/profile/2006389>), [Katarzyna Szwamel](https://sciprofiles.com/profile/1759111) (<https://sciprofiles.com/profile/1759111>),

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Int. J. Environ. Res. Public Health **2022**, *19*(12), 7449; <https://doi.org/10.3390/ijerph19127449> (<https://doi.org/10.3390/ijerph19127449>) - 17 Jun 2022

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Abstract The study aimed at assessing physical fitness and occurrence of the frailty syndrome among social welfare homes' residents as well as defining factors which determine the level of frailty and its occurrence. The examination included 198 residents (115 females and 83 males of [...] [Read more](#). (This article belongs to the Special Issue [Prevention and Management of Frailty](#) ([/journal/ijerph/special_issues/Prevet_Frailty](#)))

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Innovative Application of Diathermy in Orthodontics: A Case Report ([/1660-4601/19/12/7448](#))

by [Nunzio Cirulli](https://sciprofiles.com/profile/2416608) (<https://sciprofiles.com/profile/2416608>), [Alessio Danilo Inchingolo](https://sciprofiles.com/profile/1541544) (<https://sciprofiles.com/profile/1541544>),

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Abstract Introduction: Several strategies have been proposed in the literature to accelerate tooth movement, many of which are invasive and have numerous side effects, such as surgical techniques (corticotomy and piezosonic technique). This research investigates to what extent diathermy can accelerate the orthodontic alignment [...] [Read more](#). (This article belongs to the Special Issue [Basics of Hygiene in Public Health and Health Promotion](#) ([/journal/ijerph/special_issues/hygiene_public_health](#)))

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Association of Air Pollution and Weather Factors with Traffic Injury Severity: A Study in Taiwan (1660-4601/19/12/7442)

by [Ta-Chien Chan](https://sciprofiles.com/profile/85291) (<https://sciprofiles.com/profile/85291>), [Chih-Wei Pai](https://sciprofiles.com/profile/286617) (<https://sciprofiles.com/profile/286617>), [Chia-Chieh Wu](https://sciprofiles.com/profile/author/R1JkMnJidGj1bUhyNmIEdzdvaDROSDZ0ZUlqcmdLaFBjRGRwRFZsZidZND0=) (<https://sciprofiles.com/profile/author/R1JkMnJidGj1bUhyNmIEdzdvaDROSDZ0ZUlqcmdLaFBjRGRwRFZsZidZND0=>), [Jason C. Hsu](https://sciprofiles.com/profile/1206410) (<https://sciprofiles.com/profile/1206410>), [Ray-Jade Chen](https://sciprofiles.com/profile/author/ZERRSTM4Q3RSSk9UUnJ6TVJieUxFUUY4VXU5aUpsL2RYYVgwNjJucXhobz0=) (<https://sciprofiles.com/profile/author/ZERRSTM4Q3RSSk9UUnJ6TVJieUxFUUY4VXU5aUpsL2RYYVgwNjJucXhobz0=>) and [Wen-Ta Chiu](https://sciprofiles.com/profile/1816599) (<https://sciprofiles.com/profile/1816599>) and [Carlos Lam](https://sciprofiles.com/profile/1816599) (<https://sciprofiles.com/profile/1816599>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7442; <https://doi.org/10.3390/ijerph19127442> (<https://doi.org/10.3390/ijerph19127442>) - 17 Jun 2022

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Abstract Exposure to air pollutants may elevate the injury severity scores (ISSs) for road traffic injuries (RTIs). This multicenter cross-sectional study aimed to investigate the associations between air pollution, weather conditions, and RTI severity. This retrospective study was performed in Taiwan in 2018. The [...] [Read more](#).

(This article belongs to the Special Issue [Recent Research on Traffic Injuries and Risk-Taking Behaviours among Motorcycle and Bicycle Riders](#) ([/journal/ijerph/special_issues/traffic_injuries_risk_motorcycle_bicycle_riders](#)))

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Sport Motivation from the Perspective of Health, Institutional Embeddedness and Academic Persistence among Higher Educational Students (1660-4601/19/12/7423)

by [Karolina Eszter Kovács](https://sciprofiles.com/profile/1843489) (<https://sciprofiles.com/profile/1843489>), [Klára Kovács](https://sciprofiles.com/profile/2493263) (<https://sciprofiles.com/profile/2493263>), [Fruzsina Szabó](https://sciprofiles.com/profile/author/VE14S2RCaZkWhoc90MmJRNzdWMMpObWUWip2Yz0=) (<https://sciprofiles.com/profile/author/VE14S2RCaZkWhoc90MmJRNzdWMMpObWUWip2Yz0=>), [Beáta Andrea Dan](https://sciprofiles.com/profile/author/TCtzaVNMN0tEV2ZhNWQxNmhiWk3WXRqYnlTSUlgNU43aDh0SXdBMMw4QT0=) (<https://sciprofiles.com/profile/author/TCtzaVNMN0tEV2ZhNWQxNmhiWk3WXRqYnlTSUlgNU43aDh0SXdBMMw4QT0=>), [Zsolt Szakál](https://sciprofiles.com/profile/author/ZIFLTXUwUEtDa1NEZVpMmJqTDhzSWIhNjJoU01iNkRjMVd4enRHNCtBOD0=) (<https://sciprofiles.com/profile/author/ZIFLTXUwUEtDa1NEZVpMmJqTDhzSWIhNjJoU01iNkRjMVd4enRHNCtBOD0=>), [Marianna Moravec](https://sciprofiles.com/profile/author/YWFsVVISQkZsYVA2RGkxSXDUOExqjdaSHdrSzNoZzh1TWxBOXU1aFM5Zz0=) (<https://sciprofiles.com/profile/author/YWFsVVISQkZsYVA2RGkxSXDUOExqjdaSHdrSzNoZzh1TWxBOXU1aFM5Zz0=>), [Dániel Szabó](https://sciprofiles.com/profile/author/RUiyVVIbam5KLzNPT29GmmdaN3ZVTFV1dVvzYXBsQm9qeWpVUmcwbjJsQT0=) (<https://sciprofiles.com/profile/author/RUiyVVIbam5KLzNPT29GmmdaN3ZVTFV1dVvzYXBsQm9qeWpVUmcwbjJsQT0=>), [Timea Olajos](https://sciprofiles.com/profile/author/MW1iME1TVVBWUnJqYU1FakFWaFB4aUp4OXNyOXhDYVVOREfQkVvVYUkU0=) (<https://sciprofiles.com/profile/author/MW1iME1TVVBWUnJqYU1FakFWaFB4aUp4OXNyOXhDYVVOREfQkVvVYUkU0=>), [Csilla Csukonyi](https://sciprofiles.com/profile/2276319) (<https://sciprofiles.com/profile/2276319>), [Dávid Papp](https://sciprofiles.com/profile/2276424) (<https://sciprofiles.com/profile/2276424>), [Balázs Órsi](https://sciprofiles.com/profile/author/NmE1MXQya1o2Tst4SDVWTEsSOGJUMjIqAEVpWUVwNG0wUDNETHEOR3h4Zz0=) (<https://sciprofiles.com/profile/author/NmE1MXQya1o2Tst4SDVWTEsSOGJUMjIqAEVpWUVwNG0wUDNETHEOR3h4Zz0=>) and [Gabriella Puztai](https://sciprofiles.com/profile/1469261) (<https://sciprofiles.com/profile/1469261>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7423; <https://doi.org/10.3390/ijerph19127423> (<https://doi.org/10.3390/ijerph19127423>) - 16 Jun 2022

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
Abstract Regular physical activity from an early age is an important part of a healthy life because if we incorporate exercise early into our lifestyle, we are more likely to maintain our commitment to sport into adulthood and even throughout our lives. In our [...] [Read more](#).

(This article belongs to the Special Issue [Physical, Psychological, and Social Health in Youth through Exercise and Healthy Behaviours](#) ([/journal/ijerph/special_issues/physical_psychological_social_youth_exercise](#)))

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Influence of Sport Practice and Body Weight on Physical Fitness in Schoolchildren Living in the Campania Region (1660-4601/19/12/7412)

by [Annamaria Mancini](https://sciprofiles.com/profile/300692) (<https://sciprofiles.com/profile/300692>), [Domenico Martone](https://sciprofiles.com/profile/2280730) (<https://sciprofiles.com/profile/2280730>), [Daniela Vitucci](https://sciprofiles.com/profile/2752957) (<https://sciprofiles.com/profile/2752957>), [Adriano Capobianco](https://sciprofiles.com/profile/2279587) (<https://sciprofiles.com/profile/2279587>), [Andreina Alfieri](https://sciprofiles.com/profile/510148) (<https://sciprofiles.com/profile/510148>), [Pasqualina Buono](https://sciprofiles.com/profile/1324150) (<https://sciprofiles.com/profile/1324150>) and [Stefania Orrù](https://sciprofiles.com/profile/1617256) (<https://sciprofiles.com/profile/1617256>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7412; <https://doi.org/10.3390/ijerph19127412> (<https://doi.org/10.3390/ijerph19127412>) - 16 Jun 2022

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Abstract Background: Physical fitness (PF) levels correlate with health hallmarks at all ages. In this study, we aimed to determine the PF level of schoolchildren from the Campania Region (Italy) through health-related PF (HRPF) components, taking into account body weight and sport practice (SP). [...] [Read more](#).

(This article belongs to the Special Issue [Lifestyle-Induced and Aging-Induced Changes in Body Composition and Physical Fitness: Focus on Healthy Longevity](#) ([/journal/ijerph/special_issues/aging_fitness](#)))

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Effects of Sex, Training, and Maturity Status on the Cardiopulmonary and Muscle Deoxygenation Responses during Incremental Ramp Exercise (1660-4601/19/12/7410)

by [Adam Runacres](https://sciprofiles.com/profile/author/YjFHeUhxS3VuNH2eXE0TTY2RHZId2VMWUJTSEhYYytnRihPZWtIn0Inaz0=) (<https://sciprofiles.com/profile/author/YjFHeUhxS3VuNH2eXE0TTY2RHZId2VMWUJTSEhYYytnRihPZWtIn0Inaz0=>), [Kelly Mackintosh](https://sciprofiles.com/profile/376608) (<https://sciprofiles.com/profile/376608>), [Tim Evans](https://sciprofiles.com/profile/author/QUNZdmMzMTAxd2hMvJYZStWZVJ5TG1ITInxM0ZXUktFVm0zNEgVnQyaz0=) (<https://sciprofiles.com/profile/author/QUNZdmMzMTAxd2hMvJYZStWZVJ5TG1ITInxM0ZXUktFVm0zNEgVnQyaz0=>) and [Melitta A. McNarry](https://sciprofiles.com/profile/1083124) (<https://sciprofiles.com/profile/1083124>)



Int. J. Environ. Res. Public Health **2022**, *19*(12), 7410; <https://doi.org/10.3390/ijerph19127410> (<https://doi.org/10.3390/ijerph19127410>) - 16 Jun 2022

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Abstract Whilst participation in regular exercise and sport has generally increased over recent decades globally, fundamental questions remain regarding the influence of growth, maturation, and sex on the magnitude of training response throughout adolescence. Trained (108 participants, 43 girls; age: 14.3 ± 1.8 years) [...] [Read more](#).

(This article belongs to the Special Issue [Cardiorespiratory Fitness across the Health, Fitness and Lifespan](#) ([/journal/ijerph/special_issues/Cardiorespiratory_Fitness](#)))

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Potential Cost Savings for the Healthcare System by Physical Activity in Different Chronic Diseases: A Pilot Study in the Veneto Region of Italy (1660-4601/19/12/7375)


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[Andrea Ermolao](https://sciprofiles.com/profile/367894)
Int. J. Environ. Res. Public Health **2022**, *19*(12), 7375; <https://doi.org/10.3390/ijerph19127375> (<https://doi.org/10.3390/ijerph19127375>) - 16 Jun 2022

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Abstract Background: Sedentary behaviour (SB) and physical inactivity (PI) are associated with an increased risk of chronic diseases and a significant economic burden. This pilot study aims to estimate the possible cost savings for the Veneto Regional Health Service (Italy) due to a population-based [...]

(This article belongs to the Special Issue **Functional Evaluation and Exercise Prescription in Chronic Diseases** ([/journal/ijerph/special_issues/Functional_Evaluation_Exercise_Prescription_Chronic_Diseases](#)))

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Opinions and Practices Regarding Electronic Cigarette Use among Middle School Students from Rural Areas of Romania (1660-4601/19/12/7372)

by [Tania Elena Tudor](https://sciprofiles.com/profile/1943319) and [Lucia Maria Lotrean](https://sciprofiles.com/profile/254055)
Int. J. Environ. Res. Public Health **2022**, *19*(12), 7372; <https://doi.org/10.3390/ijerph19127372> (<https://doi.org/10.3390/ijerph19127372>) - 16 Jun 2022

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Abstract Background: The objectives of the study were to assess awareness, opinions, and practices regarding electronic cigarette (e-cigarette) use, as well as factors associated with their use, among middle-school aged students from rural areas of Romania. Methods: The study sample included 748 middle-school students [...]

(This article belongs to the Special Issue **Emerging Trends in Electronic Cigarette Use and Vaping** ([/journal/ijerph/special_issues/Emerging_Vaping](#)))

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[./\(1660-4601/19/12/7369/pdf?version=1655348675\)](#)

Physical Activity and Its Barriers and Facilitators among University Students in Qatar: A Cross-Sectional Study (1660-4601/19/12/7369)

by [Karima Chaabna](https://sciprofiles.com/profile/1561245)
[Ravinder Mamtani](https://sciprofiles.com/profile/author/N2IMOVZtN1craW1mZnRnY01SQ0E5WU9leJLrNfodXprMGtqYzNaOXcxRT0=)
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[Sohaila Cheema](https://sciprofiles.com/profile/920227)
Int. J. Environ. Res. Public Health **2022**, *19*(12), 7369; <https://doi.org/10.3390/ijerph19127369> (<https://doi.org/10.3390/ijerph19127369>) - 16 Jun 2022
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Abstract Physical inactivity is a leading risk factor for non-communicable diseases worldwide. This study investigated physical activity (PA) level among university students in Qatar and assessed other lifestyle and demographic factors associated with PA. A cross-sectional study was conducted between February 2017 and February [...]

(This article belongs to the Special Issue **The 2nd Edition: Management and Promotion of Healthy Habits and Active Life** ([/journal/ijerph/special_issues/MPHALL](#)))

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Employment Status and Alcohol-Attributable Mortality Risk—A Systematic Review and Meta-Analysis (1660-4601/19/12/7354)

by [Celine Saul](https://sciprofiles.com/profile/1998000) and [Shannon Lange](https://sciprofiles.com/profile/1315395)
[Charlotte Probst](https://sciprofiles.com/profile/1061882)
Int. J. Environ. Res. Public Health **2022**, *19*(12), 7354; <https://doi.org/10.3390/ijerph19127354> (<https://doi.org/10.3390/ijerph19127354>) - 15 Jun 2022
Cited by 2 ([/1660-4601/19/12/7354#metrics](#)) | Viewed by 1139


Abstract Being unemployed has been linked to various health burdens. In particular, there appears to be an association between unemployment and alcohol-attributable deaths. However, risk estimates presented in a previous review were based on only two studies. Thus, we estimated updated sex-stratified alcohol-attributable mortality [...]

(This article belongs to the Special Issue **Social Determinants of Alcohol Use and Its Consequences** ([/journal/ijerph/special_issues/social_alcohol_use_consequences](#)))

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Open Access Editorial



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Cognition Impairment and Gait Disorders in Older Adults (1660-4601/19/12/7347)

by [Patrick Manckoundia](https://sciprofiles.com/profile/623656) and [France Mourey](https://sciprofiles.com/profile/2268537)
Int. J. Environ. Res. Public Health **2022**, *19*(12), 7347; <https://doi.org/10.3390/ijerph19127347> (<https://doi.org/10.3390/ijerph19127347>) - 15 Jun 2022

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Abstract Thanks to the increase in life expectancy linked to scientific and medical progress and improvements in hygiene conditions, the population of people aged 75 years and over continues to grow worldwide, particularly in industrialized countries [...]

(This article belongs to the Special Issue **Cognitive Impairment and Gait Disorders in Older Adults** ([/journal/ijerph/special_issues/CognitiveImpairment_GaitDisorders](#)))

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[./\(1660-4601/19/12/7333/pdf?version=1655697751\)](#)

The Mental Health Impact of the COVID-19 Pandemic Second Wave on Shielders and Their Family Members (1660-4601/19/12/7333)



by [Jo Daniels](https://sciprofiles.com/profile/1711998) and [Hannah Rettie](https://sciprofiles.com/profile/2241753)
Int. J. Environ. Res. Public Health **2022**, *19*(12), 7333; <https://doi.org/10.3390/ijerph19127333> (<https://doi.org/10.3390/ijerph19127333>) - 15 Jun 2022
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Abstract In March 2020, individuals shielding from coronavirus reported high rates of distress. This study investigated whether fear of contamination (FoC) and use of government-recommended behaviours (GRB; e.g., handwashing and wearing masks) were associated with psychological distress during February 2021. An online cross-




sectional questionnaire [...] [Read more.](#)

(This article belongs to the Special Issue [The Role of Behavioural Science during COVID-19](#) ([/Journal/ijerph/special_issues/Behavioural_Disease](#)))

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Physical Education and Sports: A Backbone of the Entire Community in the Twenty-First Century ([/1660-4601/19/12/7296](#))

by  [Jean de Dieu Habyarimana](#) (<https://sciprofiles.com/profile/1702540>),  [Etienne Tugirumukiza](#) (<https://sciprofiles.com/profile/2268196>) and  [Ke Zhou](#) (<https://sciprofiles.com/profile/author/V3IDOXkrQUswY3oyeEFuMWhOTcodHpNT3Ura1MyWjFETzFEMXUyRUhoRT0=>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7296; <https://doi.org/10.3390/ijerph19127296> (<https://doi.org/10.3390/ijerph19127296>) - 14 Jun 2022

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Abstract The current state of physical inactivity of people can be traced back to the people who have been denied their fundamental human right to physical education and participation in school sports (PES). Growing up without the fundamental human right to free movement and [...] [Read more.](#)


(This article belongs to the Special Issue [The 2nd Edition: Management and Promotion of Healthy Habits and Active Life](#) ([/Journal/ijerph/special_issues/MPHHAL](#)))

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Harmful Alcohol and Drug Use Is Associated with Syndemic Risk Factors among Female Sex Workers in Nairobi, Kenya ([/1660-4601/19/12/7294](#))


by  [Alicja Beksinska](#) (<https://sciprofiles.com/profile/2205549>),  [Emily Nyariki](#) (<https://sciprofiles.com/profile/900471>),  [Rhoda Kabuti](#) (<https://sciprofiles.com/profile/author/YXNCWnZmd1IMSIR1bW1tcTNOUE82US96ZFpuUGV0aFV4ZHNmeHRJRWDpTT0=>),  [Mary Kungu](#) (<https://sciprofiles.com/profile/2783209>),

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
 [Pauline Ngurukiri](#) (<https://sciprofiles.com/profile/author/R2RaQzg4dGQ0MXhqbXV0ekJxYjRpLzdCS29IdDivZkViMW1oYtQ2TnBXND0=>),


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 [Joshua Kimani](#) (<https://sciprofiles.com/profile/author/MGdGRDh0SGVkrUpRkxad0swTmZ0RzQ0N3J6Q0RLWGLL1Y5cU9TN0V4Yz0=>) and

 [Tara S. Beattie](#) (<https://sciprofiles.com/profile/2700949>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7294; <https://doi.org/10.3390/ijerph19127294> (<https://doi.org/10.3390/ijerph19127294>) - 14 Jun 2022



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Abstract Background: Female Sex Workers (FSWs) are at high risk of harmful alcohol and other drug use. We use quantitative data to describe the prevalence of alcohol and other drug use and identify associated occupational and socio-economic risk factors, and aim to elucidate patterns [...] [Read more.](#)

(This article belongs to the Special Issue [Social Determinants of Alcohol Use and Its Consequences](#) ([/Journal/ijerph/special_issues/social_alcohol_use_consequences](#)))

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Psychological Counseling during the COVID-19 Pandemic: Clinical Thoughts and Implications Arisen from an Experience in Italian Schools ([/1660-4601/19/12/7255](#))

by  [Yura Loscalzo](#) (<https://sciprofiles.com/profile/2337719>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7255; <https://doi.org/10.3390/ijerph19127255> (<https://doi.org/10.3390/ijerph19127255>) - 14 Jun 2022

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Abstract During the COVID-19 pandemic, I worked as a psychologist in two schools: a comprehensive school (an institution including three school levels: kindergarten, primary school, and secondary school of first grade) and a Provincial Center for the Education of Adults (CPIA). This paper provides [...] [Read more.](#)

(This article belongs to the Special Issue [Everyday Life Behaviors, Medical Disorders, and Psychopathology through the Lens of the Psychodynamic Approach](#) ([/Journal/ijerph/special_issues/life_behaviors_medical_disorders](#)))

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  [./1660-4601/19/12/7246/pdf?version=1655287302](#)

Tetracyclines—An Important Therapeutic Tool for Dermatologists ([/1660-4601/19/12/7246](#))

by  [Malgorzata Orylska-Ratynska](#) (<https://sciprofiles.com/profile/2114068>),  [Waldemar Placek](#) (<https://sciprofiles.com/profile/author/S0hLNEhEbXZnL2VJRxpWm1dPSGniQT09>) and  [Agnieszka Owczarczyk-Saczonek](#) (<https://sciprofiles.com/profile/1515433>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7246; <https://doi.org/10.3390/ijerph19127246> (<https://doi.org/10.3390/ijerph19127246>) - 13 Jun 2022

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Abstract Tetracyclines are a group of antibiotics whose first representative was discovered over 70 years ago. Since then, they have been of great interest in dermatology. In addition to their antibacterial activity, they are able to inhibit metalloproteinases and exhibit anti-inflammatory, anti-apoptotic and antioxidant [...] [Read more.](#)

(This article belongs to the Special Issue [Dermatologic Therapy Research and Public Health](#) ([/Journal/ijerph/special_issues/Dermatologic_Therapy](#)))

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Gender-Specific Risk Factors and Prevalence for Sarcopenia among Community-Dwelling Young-Old Adults ([/1660-4601/19/12/7232](#))

by  [Jongseok Hwang](#) (<https://sciprofiles.com/profile/2181778>) and  [Soonjee Park](#) (<https://sciprofiles.com/profile/2184294>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7232; <https://doi.org/10.3390/ijerph19127232> (<https://doi.org/10.3390/ijerph19127232>) - 13 Jun 2022

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Abstract Sarcopenia in the elderly is a serious global public health problem. Numerous sarcopenia studies classified their subjects into a single group, but health conditions and body composition vary according to age. This study examined the prevalence of sarcopenia according to gender and assessed [...] [Read more.](#)

(This article belongs to the Special Issue [Nutritional Interventions for the Improvement of Muscle Strength, Muscle Hypertrophy and Muscle Endurance](#) ([/Journal/ijerph/special_issues/NI1](#)))

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The Relationship between Sociodemographic, Professional, and Incentive Factors and Self-Reported Level of Physical Activity in the Nurse Population: A Cross-Sectional Study (1660-4601/19/12/7221)

by [Katarzyna Wesolowska-Górniak](https://sciprofiles.com/profile/2230763) (https://sciprofiles.com/profile/2230763),

[Agnieszka Nerek](https://sciprofiles.com/profile/author/aTfTQmE4cnJHNkVTZtSVi9tMERpVEV6QUFRkRk6cnpNZFhsRmd4ZHbldz0=) (https://sciprofiles.com/profile/author/aTfTQmE4cnJHNkVTZtSVi9tMERpVEV6QUFRkRk6cnpNZFhsRmd4ZHbldz0=),

[Lena Serafin](https://sciprofiles.com/profile/2028438) (https://sciprofiles.com/profile/2028438) and [Bożena Czarkowska-Pączek](https://sciprofiles.com/profile/1354732) (https://sciprofiles.com/profile/1354732)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7221; <https://doi.org/10.3390/ijerph19127221> (https://doi.org/10.3390/ijerph19127221) - 13 Jun 2022

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Abstract Research indicates that while nurses are aware of the benefits of physical activity (PA), their adherence to PA is low. The results of workplace interventions that increase PA are inconsistent. The study aim was identification the sociodemographic, professional, and incentive factors influencing nurses' [...] [Read more](#).

(This article belongs to the Section [Health Behavior, Chronic Disease and Health Promotion](#) ([/journal/ijerph/sections/health_promotion](#)))

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Perceptions of Fertility Physicians Treating Women Undergoing IVF Using an Egg Donation (1660-4601/19/12/7159)

by [Reut Ben-Kimhy](https://sciprofiles.com/profile/author/Y2l4ZVFMeWJxSHFMSnIGSHRERnhDQnhHM3luUkFmZ0dwSjBPyVhYNGNhVT0=) (https://sciprofiles.com/profile/author/Y2l4ZVFMeWJxSHFMSnIGSHRERnhDQnhHM3luUkFmZ0dwSjBPyVhYNGNhVT0=) and

[Orit Taubman-Ben-Ari](https://sciprofiles.com/profile/1519941) (https://sciprofiles.com/profile/1519941)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7159; <https://doi.org/10.3390/ijerph19127159> (https://doi.org/10.3390/ijerph19127159) - 10 Jun 2022

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Abstract In the course of their work, medical teams are routinely exposed to difficult and stressful situations. The few studies in the literature that have examined physicians' perceptions and responses to such situations have focused primarily on the fields of emergency medicine and chronic [...] [Read more](#).

(This article belongs to the Special Issue [Health and Well-Being Related to New Family Forms: Perspectives of Adult Individuals, Couples, Extended Family Members, Children, and Professionals](#) ([/journal/ijerph/special_issues/New_Family_Forms_Wellbeing](#)))

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The GRANDPACT Project: The Development and Evaluation of an Intergenerational Program for Grandchildren and Their Grandparents to Stimulate Physical Activity and Cognitive Function Using Co-Creation (1660-4601/19/12/7150)

by [Evelien Iliano](https://sciprofiles.com/profile/2023309) (https://sciprofiles.com/profile/2023309),

[Melanie Beeckman](https://sciprofiles.com/profile/author/S2JyMW1XTWdMNDYwcWt3ME9YMHFnaVvrQmJmV1ZVVWfB5iSkxFUeTqOD0=) (https://sciprofiles.com/profile/author/S2JyMW1XTWdMNDYwcWt3ME9YMHFnaVvrQmJmV1ZVVWfB5iSkxFUeTqOD0=),

[Julie Latomme](https://sciprofiles.com/profile/505094) (https://sciprofiles.com/profile/505094) and [Greet Cardon](https://sciprofiles.com/profile/413575) (https://sciprofiles.com/profile/413575)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7150; <https://doi.org/10.3390/ijerph19127150> (https://doi.org/10.3390/ijerph19127150) - 10 Jun 2022

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Abstract In recent years, increased attention has been devoted to intergenerational physical activity (PA) programs because they may have several benefits for both children and older adults (e.g., the reduction of ageism). An intergenerational PA program focusing on grandchildren and grandparents in a 'standard' [...] [Read more](#).

(This article belongs to the Special Issue [The 2nd Edition: Management and Promotion of Healthy Habits and Active Life](#) ([/journal/ijerph/special_issues/MPHALL](#)))

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Benefits of Two 24-Week Interactive Cognitive–Motor Programs on Body Composition, Lower-Body Strength, and Processing Speed in Community Dwellings at Risk of Falling: A Randomized Controlled Trial (1660-4601/19/12/7117)

by [Hugo Rosado](https://sciprofiles.com/profile/2074138) (https://sciprofiles.com/profile/2074138), [Catarina Pereira](https://sciprofiles.com/profile/1348916) (https://sciprofiles.com/profile/1348916),

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[Armando Raimundo](https://sciprofiles.com/profile/807992) (https://sciprofiles.com/profile/807992)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7117; <https://doi.org/10.3390/ijerph19127117> (https://doi.org/10.3390/ijerph19127117) - 10 Jun 2022

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Abstract This 24-week randomized controlled trial study evaluated the effects of two interactive cognitive–motor programs on body composition, lower-body strength, and processing speed in community dwellings at risk of falling. Forty-eight participants (75.0 ± 5.4 years) were allocated into EG1 (psychomotor intervention program), EG2 [...] [Read more](#).

(This article belongs to the Special Issue [Body Composition in Sports and Health](#) ([/journal/ijerph/special_issues/Body_Composition_in_Sports](#)))

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Bibliometric Analysis of Literature on Physical Activity and COVID-19 (1660-4601/19/12/7116)

by

[Apichai Wattanapisit](https://sciprofiles.com/profile/author/dUFxV2FUZXk1MhNMZXkMHJzZndVvY9vZmdIMjNaa3c1aEJFQIzsb0hFdtd0RThaciPKeEM5MjBFZXPYK3FnbG==) (https://sciprofiles.com/profile/author/dUFxV2FUZXk1MhNMZXkMHJzZndVvY9vZmdIMjNaa3c1aEJFQIzsb0hFdtd0RThaciPKeEM5MjBFZXPYK3FnbG==)

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 **Noah Crampton** (<https://sciprofiles.com/profile/2210129>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7116; <https://doi.org/10.3390/ijerph19127116> (<https://doi.org/10.3390/ijerph19127116>) - 10 Jun 2022

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Abstract The coronavirus disease 2019 (COVID-19) pandemic induced a sudden surge in COVID-19 related publications. This bibliometric analysis aimed to analyze literature on physical activity and COVID-19 published in the PubMed database. The search terms ((physical activity [MeSH Terms] OR physical inactivity [MeSH Terms]) [...] [Read more](#). (This article belongs to the Collection [Physical Activity and Public Health](#) ([/journal/ijerph/topical_collections/physical_activity_health](#)))


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
  [./1660-4601/19/12/7114/pdf?version=1654834762](#) 


Individual, Family, and Socioeconomic Contributors to Dental Caries in Children from Low- and Middle-Income Countries ([/1660-4601/19/12/7114](#))

by  **Madiha Yousaf** (<https://sciprofiles.com/profile/author/ZXRHbEt3QkY3K0NRdWdtWUtrYkpkRmFNZFFkNUthK0haOTRaM09wYm13QT0=>),

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 **Ivan Cherez-Ojeda** (<https://sciprofiles.com/profile/1885421>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7114; <https://doi.org/10.3390/ijerph19127114> (<https://doi.org/10.3390/ijerph19127114>) - 10 Jun 2022

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Abstract Introduction: Collective evidence on risk factors for dental caries remains elusive in low- and middle-income countries (LMICs). The objective was to conduct a systematic review and meta-analysis on risk factors for dental caries in deciduous or permanent teeth in LMICs. Methods: Studies were [...] [Read more](#). (This article belongs to the Special Issue [Oral Health and Disease Prevention](#) ([/journal/ijerph/special_issues/Oral_DiseasePrevention](#)))

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Relationship among Self-Efficacy Expectations, Locus of Control, and Attributions in Bariatric Patients ([/1660-4601/19/12/7107](#))

by  **Carla Ugarte** (<https://sciprofiles.com/profile/author/MVRJNFd4RW5obENFNnNTYVwwdUdsUG1rdTB3bEpgTXRGY1BmMlZkNElTUT0=>),

 **Álvaro Quiñones** (<https://sciprofiles.com/profile/author/cXFuRjJnazNuRVVXsUFMZmtUZEf5tk1RjBNQXZERW1CME9jcTFGwkdFcz0=>) and

 **Luis Angel Saúl** (<https://sciprofiles.com/profile/1484651>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7107; <https://doi.org/10.3390/ijerph19127107> (<https://doi.org/10.3390/ijerph19127107>) - 09 Jun 2022



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Abstract Background: Bariatric surgery is the most effective method for achieving accelerated weight loss. However, in the short- and medium-term, between 20% and 40% of patients regain a significant percentage of the weight lost. Cognitive and attitudinal psychological variables contribute to explaining weight regain. [...] [Read more](#). (This article belongs to the Special Issue [Health Promotion: The Impact of Psychological Factors on Lifestyle](#) ([/journal/ijerph/special_issues/HealthPromotion_Psychological](#)))

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The Association between Differentiation of Self and Life Satisfaction among Chinese Emerging Adults: The Mediating Effect of Hope and Coping Strategies and the Moderating Effect of Child Maltreatment History ([/1660-4601/19/12/7106](#))

by  **Xiamei Guo** (<https://sciprofiles.com/profile/2174709>),

 **Jingwen Huang** (<https://sciprofiles.com/profile/author/ZkdoZnlmUGZNOVZncUVNRjZ1UTBud08rKzM1dS9lb2ZhTEhTa1JGVHl0VT0=>) and

 **Yuexia Yang** (<https://sciprofiles.com/profile/author/TldUT2R0b3ZVRStjYkNkdHpVZ1NMVENGY1RLU3gyRzUrSUsvM3k4SVhwYz0=>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7106; <https://doi.org/10.3390/ijerph19127106> (<https://doi.org/10.3390/ijerph19127106>) - 09 Jun 2022

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Abstract Background: Differentiation of self (DoS) is a core construct in Bowen family systems theory. At the interpersonal level, it represents the capacity to maintain rational thinking rather than reacting emotionally, especially while under stress. Previous studies have demonstrated the positive association between DoS [...] [Read more](#). (This article belongs to the Section [Health Behavior, Chronic Disease and Health Promotion](#) ([/journal/ijerph/sections/health_promotion](#)))

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Cardiovascular Disease Mortality Attributable to Low Whole-Grain Intake in CHINA: An Age-Period-Cohort and Joinpoint Analysis ([/1660-4601/19/12/7096](#))

by  **Fangyao Chen** (<https://sciprofiles.com/profile/656866>),

 **Yuxiang Zhang** (<https://sciprofiles.com/profile/author/aXVoajlvS0g2MjZ4ZFhYak4xRVJGYVv2RWdDTS9qTGUwQTJRUR2RZJKJOD0=>),

 **Shiyu Chen** (<https://sciprofiles.com/profile/2584828>),

 **Aima Si** (<https://sciprofiles.com/profile/author/a0RzUFk4SFVKV2hYaTJKOVd2RHRaOTJVR0h6MkhGVHxblJwYlhPTIRRT0=>) and

 **Weimei Hu** (<https://sciprofiles.com/profile/1898881>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7096; <https://doi.org/10.3390/ijerph19127096> (<https://doi.org/10.3390/ijerph19127096>) - 09 Jun 2022

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Abstract Cardiovascular disease (CVD) is the leading cause of death worldwide. Low whole-grain intake is found to be one of the most important risk factors for cardiovascular disease development and progression. In this study, we focused on exploring the long-term trends of low whole-grain [...] [Read more](#). (This article belongs to the Collection [Health Behaviors, Risk Factors, NCDs and Health Promotion](#) ([/journal/ijerph/topical_collections/TC_health_behaviors](#)))

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The Influence of Sociodemographic Factors on Symptoms of Anxiety, the Level of Aggression and Alcohol Consumption in the Title of the COVID-19 Pandemic among Polish Respondents. (1660-4601/19/12/7081)

by [Szymon Florek](https://sciprofiles.com/profile/1618601) (<https://sciprofiles.com/profile/1618601>), [Magdalena Piegza](https://sciprofiles.com/profile/1465011) (<https://sciprofiles.com/profile/1465011>), [Paweł Dębski](https://sciprofiles.com/profile/1286027) (<https://sciprofiles.com/profile/1286027>), [Piotr Gorczyca](https://sciprofiles.com/profile/author/ZUZyK0NmdzZSdnZRY0FROVdIY1FCSUhgZUpmZnB4NG82dGRkVWg4d3IKTT0=) (<https://sciprofiles.com/profile/author/ZUZyK0NmdzZSdnZRY0FROVdIY1FCSUhgZUpmZnB4NG82dGRkVWg4d3IKTT0=>) and [Robert Pudło](https://sciprofiles.com/profile/1446666) (<https://sciprofiles.com/profile/1446666>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7081; <https://doi.org/10.3390/ijerph19127081> (<https://doi.org/10.3390/ijerph19127081>) - 09 Jun 2022
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Abstract The COVID-19 pandemic has had a significant impact on the mental health of most of the world's population. The authors of this study decided to identify differences in the intensity of anxiety, aggression and alcohol consumption within the study population. The study was [...] [Read more](#).
(This article belongs to the Special Issue [COVID-19 Pandemics and Public Health](#) ([./journal/ijerph/special_issues/COVID19_pandemics_public_health](#)))

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A Food Relief Charter for South Australia—Towards a Shared Vision for Pathways Out of Food Insecurity. (1660-4601/19/12/7080)

by [Tahna L. Pettman](https://sciprofiles.com/profile/2205494) (<https://sciprofiles.com/profile/2205494>), [Carmel Williams](https://sciprofiles.com/profile/2571508) (<https://sciprofiles.com/profile/2571508>), [Sue Booth](https://sciprofiles.com/profile/390647) (<https://sciprofiles.com/profile/390647>), [Deborah Wildgoose](https://sciprofiles.com/profile/author/dW8wSUrTWtTTWRFOEYvT0JPeGdZZDIKdkpgUHRNMC9zclBrcitsQTJmY0z=) (<https://sciprofiles.com/profile/author/dW8wSUrTWtTTWRFOEYvT0JPeGdZZDIKdkpgUHRNMC9zclBrcitsQTJmY0z=>), [Christina M. Pollard](https://sciprofiles.com/profile/390646) (<https://sciprofiles.com/profile/390646>), [John Coveney](https://sciprofiles.com/profile/1227809) (<https://sciprofiles.com/profile/1227809>), [Julie-Anne McWhinnie](https://sciprofiles.com/profile/author/YU55INwWEFCaE14RGUyT1I3c1haWU8yeWFWdm9rYTk0Z0N0xUy9LWHZEST0=) (<https://sciprofiles.com/profile/author/YU55INwWEFCaE14RGUyT1I3c1haWU8yeWFWdm9rYTk0Z0N0xUy9LWHZEST0=>), [Marian McAllister](https://sciprofiles.com/profile/author/Yk1zmkVMT0JaT3NrdkJUWURqa1FmSys1SUZiZmE1eGtRRytralE3WIYxNGtJZ2ZoeakybIBrU2lrVEVJR2V2Ug==) (<https://sciprofiles.com/profile/author/Yk1zmkVMT0JaT3NrdkJUWURqa1FmSys1SUZiZmE1eGtRRytralE3WIYxNGtJZ2ZoeakybIBrU2lrVEVJR2V2Ug==>)

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Abstract Chronic food insecurity persists in high-income countries, leading to an entrenched need for food relief. In Australia, food relief services primarily focus on providing food to meet immediate need. To date, there has been few examples of a vision in the sector towards [...] [Read more](#).
(This article belongs to the Special Issue [Policy Levers and Actions to Address Food Insecurity in Developing and Developed Countries](#) ([./journal/ijerph/special_issues/food_insecurity_policy](#)))

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Correlational Study of Emotional Stress, Pain, and the Presence of Inpatient Companions for Cancer Inpatients during the COVID-19 Pandemic. (1660-4601/19/12/7004)

by [Ya-Huei Chen](https://sciprofiles.com/profile/author/WlhMwMjwaHNIR3dXdy8wRzJPTkICTmtSaTJ4Q3E3ZmhOdkQ4UWZwVEJuWT0=) (<https://sciprofiles.com/profile/author/WlhMwMjwaHNIR3dXdy8wRzJPTkICTmtSaTJ4Q3E3ZmhOdkQ4UWZwVEJuWT0=>), [Shu-Ling Chen](https://sciprofiles.com/profile/1963309) (<https://sciprofiles.com/profile/1963309>), [Chia-Hui Chang](https://sciprofiles.com/profile/author/aHJDQUROSHBBVIVmTk1hMEZETjlyRIB6OFpFL1ZPb0tDWG1DNWNpWWXJQT0=) (<https://sciprofiles.com/profile/author/aHJDQUROSHBBVIVmTk1hMEZETjlyRIB6OFpFL1ZPb0tDWG1DNWNpWWXJQT0=>), [Pi-Q Wu](https://sciprofiles.com/profile/author/bFhOWTIDYzFRZIViaVMxaEHXQ1JXSUMvMEZ2ZmZpZG5FbDB3M3Jlc0JvOD0=) (<https://sciprofiles.com/profile/author/bFhOWTIDYzFRZIViaVMxaEHXQ1JXSUMvMEZ2ZmZpZG5FbDB3M3Jlc0JvOD0=>), [Hsiu-Hui Yu](https://sciprofiles.com/profile/2169205) (<https://sciprofiles.com/profile/2169205>), [Sou-Jen Shih](https://sciprofiles.com/profile/author/VWdCTjRNcmzhYXMyMgh5ckR5Z2NyNEJwL3FFOGZLeIZvcWfNz4B3djVXcz0=) (<https://sciprofiles.com/profile/author/VWdCTjRNcmzhYXMyMgh5ckR5Z2NyNEJwL3FFOGZLeIZvcWfNz4B3djVXcz0=>) and [Mei-Yu Chang](https://sciprofiles.com/profile/author/aTNYNFluYitUy2YtYjzeWs2Ym9waU9tRjzZcGRjeGpySndqMjVDZmVzbz0=) (<https://sciprofiles.com/profile/author/aTNYNFluYitUy2YtYjzeWs2Ym9waU9tRjzZcGRjeGpySndqMjVDZmVzbz0=>)

Int. J. Environ. Res. Public Health **2022**, *19*(12), 7004; <https://doi.org/10.3390/ijerph19127004> (<https://doi.org/10.3390/ijerph19127004>) - 08 Jun 2022
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Abstract The outbreak of COVID-19 poses an immense global threat. Visitors to hospitalized patients during a pandemic might themselves be carriers, and so hospitals strictly control patients and inpatient companions. However, it is not easy for cancer patients to adjust the times of their [...] [Read more](#).
(This article belongs to the Special Issue [Non-Pharmacological Interventions for the Management of Chronic Health Conditions and Non-Communicable Diseases](#) ([./journal/ijerph/special_issues/management_health_conditions](#)))

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Mental Well-Being and Sexual Intimacy among Men and Gender Diverse People Who Have Sex with Men during the First UK COVID-19 Lockdown: A Mixed-Methods Study. (1660-4601/19/12/6985)

by [Natalie L. Edelman](https://sciprofiles.com/profile/2144220) (<https://sciprofiles.com/profile/2144220>), [T. Charles Witzel](https://sciprofiles.com/profile/author/c3VpSmhkQlhMZIo5MvVOM2E0NVRrNXIPTUizVXBvcDRuWTZ4emNWaHRzTT0=) (<https://sciprofiles.com/profile/author/c3VpSmhkQlhMZIo5MvVOM2E0NVRrNXIPTUizVXBvcDRuWTZ4emNWaHRzTT0=>), [Phil Samba](https://sciprofiles.com/profile/author/M1FSeUJNN2JKall2eFpxVE4yZGwrMDIWTJ2MEZ4d1hnR0xyRFRwSnRVWT0=) (<https://sciprofiles.com/profile/author/M1FSeUJNN2JKall2eFpxVE4yZGwrMDIWTJ2MEZ4d1hnR0xyRFRwSnRVWT0=>), [Will Natland](https://sciprofiles.com/profile/author/a21keUppySXl2K21RTGpMNFgrT3BKVHJ4TXIOVzQ2QWIGVzVoTUZWk2ovMD0=) (<https://sciprofiles.com/profile/author/a21keUppySXl2K21RTGpMNFgrT3BKVHJ4TXIOVzQ2QWIGVzVoTUZWk2ovMD0=>) and [Tom Nadarzynski](https://sciprofiles.com/profile/author/VzZlSpMcXp0MkEvSFzjdJUTWJzaEU5WTFINENKclhhUmdta2s1MVY4QT0=) (<https://sciprofiles.com/profile/author/VzZlSpMcXp0MkEvSFzjdJUTWJzaEU5WTFINENKclhhUmdta2s1MVY4QT0=>)

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Abstract This mixed-methods study aimed to explore mental well-being, circumstances and strategies around managing sexual intimacy and risk during the first UK COVID-19 lockdown (Spring 2020) among men and gender diverse people who have sex with men (MGDPSM), commencing while lockdown was in progress. [...] [Read more](#).
(This article belongs to the Special Issue [Second Edition of Population Behavior during COVID-19](#) ([./journal/ijerph/special_issues/Behavior_Covid19_2](#)))

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
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Article

Medication Knowledge and Adherence in Type 2 Diabetes Mellitus Patients in Brunei Darussalam: A Pioneer Study in Brunei Darussalam

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Abstract: Aim: The present study measured the medication knowledge and medication adherence in patients with type 2 diabetes in Brunei Darussalam. Demographic details and diabetes knowledge were also evaluated. Methods: A cross-sectional study conducted via the administration of a structured questionnaire consisting of 4 sections via a face-to-face interview. Results: A total of 118 participants were interviewed. A majority of the participants were aged 40 years or above (106, 89.8%). The mean number of total medications that the participants were taking was 7.36 ± 2.87 and the mean number of antidiabetic medications was 2.39 ± 1.06 . As for the antidiabetic therapy, the largest proportion of the participants were taking oral antidiabetic medications only (87, 73.73%). In the diabetes knowledge section of the questionnaire, more than half of the participants (63, 53.34%) scored higher than the acquired mean score. Family history, education level, and total medications taken were significantly correlated with diabetes knowledge. However, in the medication knowledge section of the questionnaire, the mean score (3.37 ± 1.38) was below the intended score for good knowledge. Medication knowledge has been significantly associated with gender, family history and total medications taken. A majority of the participants reported non-adherence (74, 62.71%) due to various reasons. In this study, those of the Malay race were significantly correlated with adherence to their medication regimen. This study also revealed that there is no significant relationship between diabetes knowledge, medication knowledge and medication adherence. Conclusions: The present study provides insights in regard to patients with type 2 diabetes in Brunei Darussalam and their knowledge towards the disease as well as their medications. Despite the lack of significance between the variables, the rate of non-adherence is still alarming. Further studies are required to better understand the barriers to non-adherence in these patients.

Keywords: medication knowledge; medication adherence; type 2 diabetes mellitus; glycemic control; HbA1c



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1. Introduction

Diabetes mellitus (DM) can be described as a group of metabolic diseases indicated by chronic hyperglycemia resulting from impaired insulin secretion, action or both. There are a number of pathogenic pathways by which diabetes can develop, resulting in different types of DM with the common ones being type 1 diabetes mellitus (T1DM) and type 2 diabetes mellitus (T2DM) [1,2]. T2DM is the most common type of DM; 90% of DM cases are T2DM. It is also known as non-insulin dependent diabetes. By the year 2030, it is estimated that 439 million people will acquire T2DM [3].

According to a study done in 2016 on 2082 participants, the prevalence of diabetes in Brunei Darussalam was 9.7% in which diabetes was indicated as having fasting blood glucose ≥ 7.0 mmol/L. It has been stated that despite the success in controlling communicable diseases, there was an epidemic of non-communicable diseases (NCDs) in the sultanate, including T2DM. The prevalence of diabetes in Brunei Darussalam is lower in comparison to the neighbouring countries, Singapore and Malaysia, with 11% and 18% of diabetes prevalence, respectively. However, considering that obesity has been linked to be a risk factor for T2DM, the prevalence of obesity in Brunei Darussalam, 28%, ranks highest among Southeast Asian countries. A weighted measurement by the study had confirmed the extensive presence of key risk factors, such as smoking and obesity, and morbidities in relation to NCD in Brunei Darussalam. The standardized methodology used in the study is important for the surveillance of public health interventions as it provides policy makers with the ability to better evaluate public health needs, identify priority settings and set proper and relevant objectives [4].

Diabetes mellitus has been the third leading cause of death in Brunei Darussalam since 2012, accounting for 10.1% of the total deaths nationwide in 2017. This is an increase from the 2016 mortality rate from diabetes mellitus, which was 9.1%. Due to the proliferation of diabetes in the sultanate, the government, in particular the Ministry of Health (MOH), has been implementing initiatives to minimize the prevalence of the disease. These initiatives encompass an array of strategies such as the provision of health promotion and health education activities in an attempt to raise diabetes awareness. A health programme administered by the government, known as the Health Screening Effectiveness (3PK) Programme, has been offered to the public. It provides health screening services for risk profiling and early detection of NCDs, including diabetes. Diabetes screening can also be performed in any private and public health centre in the sultanate. Despite the efforts made by the government, there is still the need to involve other relevant stakeholders to cooperate and engage in these pursuits to raise diabetes awareness, empower the people to make healthy decisions, and ultimately control the prevalence of diabetes in Brunei Darussalam [4,5].

Patients' knowledge of their medications can be defined as the set of necessary information obtained by the patient on their medication for correct use. This includes the therapeutic goal, dosage, times to take it, safety, and its conservation methods in addition to possible interactions and adverse reactions [6]. Poor patient medication knowledge may result in a decrease in medication's effectiveness, the emergence of other health issues, medication misuse, as well as negative results linked to medication such as adverse drug reaction [7]. Adverse drug reaction is considered as an important public health concern as its incidence is prevalent.

Sound medication knowledge has been demonstrated to be positively corresponded with a better quality of life, treatment adherence, and achieving desirable results in pharmacotherapy. This is therefore crucial in disease management and in combating the frequency of adverse drug reactions [8]. One of the prerequisites for a patient's involvement in reducing medication error is proper patient education. Despite this, there is not much research that assesses patient medication knowledge in hospitals [9]. A large number of outpatients are subjected to polypharmacy and this can increase the risk of other health issues such as drug interactions and the possibility of toxicity [10]. To further examine the aforementioned issues, the objectives of this project were to evaluate the medication knowledge and medication adherence amongst T2DM patients. This study also aimed to evaluate the correlation among medication adherence and medication knowledge.

2. Methods

2.1. Study Design and Settings

The project followed a cross-sectional study design which was conducted from 26 January 2022 until 31 March 2022. The data collection was done via a researcher administered questionnaire in the form of a face-to-face interview (Refer to Supplementary Material). Participants who satisfy the inclusion criteria were approached and upon receiv-

ing their consent, the participants were interviewed. The data collection took place at one referral public hospital located in Kuala Belait.

A total of 135 participants were interviewed for this project with the first 15 participants being the pilot studies. Therefore, a total of 120 participants' data were analysed for this project. However, data from two participants were discarded due to incomplete details. The data of 118 participants were therefore included in this study.

2.2. Study Population

The minimum required sample size was determined by the use of Raosoft software [11]. The values included in the software include; (1) the population size, which is calculated to be 42,874 (9.7% prevalence of diabetes in Brunei) (2) the error of margin, which is 5% and (3) the confidence level of 95%. According to the values inserted, the required sample size is 381 patients. However, there were factors which resulted in the lower amount of the data collected compared to the required sample size. The hindering factors included; (1) COVID-19 restrictions, (2) caregivers/relatives/friends taking the medicines on behalf of the patients, (3) only conducting the study in one district rather than throughout the entire nation and (4) some patients did not want to be interviewed.

The patients who were approached for this study were those who fulfill the inclusion criteria. The patients were those attending their appointments at the Diabetic Clinic and those who were collecting their medicines at the Outpatient Pharmacy. The patients were identified through their drug profile on the Brunei Darussalam Health Information and Management System (Bru-HIMs). Bru-HIMs is a Brunei Darussalam Ministry of Health's information technology initiative where the management of all patients' data, such as patients' medical records, in public hospitals and health centres are stored electronically by an electronic patient record system [12]. The inclusion criteria were patients aged 18 years or above; residents of Brunei Darussalam (local or permanent resident); and those who have been diagnosed with T2DM for at least 6 months. The exclusion criteria were patients with Type 1 diabetes mellitus; patients not able to understand English and Malay languages; and patients taking antidiabetic medication for non-DM indication.

2.3. Questionnaire and Score Measurement

The questionnaire was received in English and was then translated to Malay by a language expert and the questionnaire was then translated back for accuracy and clarity. The questionnaire consists of four sections. The first section incorporates questions which analyse the sociodemographic information of patients and their clinical status. The second section assesses the patients' knowledge on diabetes using the Diabetes Knowledge Questionnaire (DKQ) developed by Garcia et al. [13]. The tool comprises 24 items with 3 answer options; "yes", "no", and "I don't know". A correct option is awarded with 1 point and no point is awarded for the incorrect option ("I don't know" is considered as incorrect). The overall score of each patient was calculated by averaging the total points awarded, with the minimum and maximum scores being 0 and 24 respectively. A higher score indicates better diabetes knowledge [13].

The third section measures the patient's knowledge on their antidiabetic medications using the questionnaire adapted by McPherson et al. and Okuyan et al., which was used in the study by Mekonnen, G., and Gelayee, D. [14–16]. The section includes seven validated yes/no questions. Total medication knowledge score is determined by the number of correct responses in which 1 point is granted for each correct answer and 0 if incorrectly answered or not answered. An additional one point was granted to each participant if the exact mechanism of their medication was stated correctly for question 2 in the section. Therefore, the maximum score for this section is 8 and the minimum is 0. A good knowledge score is indicated by a score of ≥ 5 [16].

The fourth section evaluates a patient's medication adherence using the tool devised by experts for a study by Arifulla M et al. [17]. This section consists of questions in regard to adherence and related factors. Medication adherence was reported via a yes or no question.

2.4. Pilot Study

First, face and content validation were conducted among six senior researchers who had conducted a similar study earlier. Second, a pilot study was conducted with the first 15 randomly selected participants who fulfilled the inclusion criteria. The pilot study data were analysed using Cronbach's Alpha test on RStudio software [18,19]. For the diabetes knowledge questionnaire consisting of 24 items, the Cronbach's Alpha was calculated to be $\alpha = 0.74$. The medication knowledge section consisted of 7 items with the Cronbach's Alpha of $\alpha = 0.70$. Originally, the medication adherence questionnaire consisted of 11 questions. However, based on the results of the pilot study, the questionnaire was revised by removing 3 items: "Do you make your own modification in the dose of medicines prescribed?", "Do you make your own modification in the timing of the prescribed medications?", and "Do you have good knowledge about antidiabetic medications prescribed to you?". The medication adherence final questionnaire consisted of 8 items and the Cronbach's Alpha is $\alpha = 0.61$. Third, the test-retest reliability was also performed for which we have reported a good consistency of the questionnaires with a Cronbach's Alpha value of >0.5 [20]. Fourth, the revised questionnaire was then again re-validated by the six senior researchers to ensure its contents were accurate and consistent.

2.5. Data Analysis

The data collected were analysed using RStudio software. Demographic and clinical variables were described using descriptive statistics. Frequency counts and percentages were used to present the responses to categorical variables. A Pearson correlation test was used to test the association between the demographic variables and medication knowledge as well as between medication knowledge and medication adherence. The significance level was set at $p < 0.05$.

2.6. Ethical Approval

Ethical approvals for the project were obtained from PAPRSB Institute of Health Sciences Research Ethics Committee, Universiti Brunei Darussalam. Patients who participated in the project were briefed on the project and its aim. They were also required to fill in a consent form prior to the interview and those who refused to do so were not eligible to participate in this survey. The data collected from this project had remained confidential throughout the period of this project. As for the questionnaires, permissions had been obtained from the authors of corresponding questionnaires.

3. Results

3.1. Demographic Data

The study included data from a total of 118 participants in which their demographic details are tabulated in Table 1. The mean number of total medications that the participants were taking at the time is 7.36 ± 2.87 (95% CI: 6.83, 7.88). The mean number of antidiabetic medications that the participants were taking is 2.39 ± 1.06 (95% CI: 2.20, 2.58). Most of the participants were taking only oral antidiabetic medications for their antidiabetic regimen (87, 73.73%).

Table 1. Sociodemographic details of participants ($n = 118$).

Details	n (%)
Age (year)	
<40	12 (10.20)
40–60	61 (51.70)
>60	45 (38.10)
Gender	
Male	62 (52.50)
Female	56 (47.50)
Race	
Malay	101 (85.60)
Non-malay	17 (14.40)
Education level	
No formal education	2 (1.70)
Primary school	13 (11.00)
Secondary school	80 (67.80)
Higher education	23 (19.50)
Occupation	
Retired	45 (38.14)
Unemployed	23 (19.49)
Private sector	23 (19.49)
Government sector	21 (17.80)
Self-employed	5 (4.24)
Student	1 (0.85)
Family history	
Yes	88 (74.58)
No	24 (20.34)
Not sure	6 (5.08)
Duration since diagnosed with T2DM	
6–11 months	2 (1.69)
1–4 years	25 (21.19)
5–9 years	16 (13.56)
≥ 10	75 (63.56)
Participants' antidiabetic therapy	
Insulin only	2 (1.69)
Insulin combined with oral medication	29 (24.58)
Oral medication only	87 (73.73)
Abbreviation:	
T2DM–Type 2 diabetes mellitus	

3.2. Diabetes Knowledge Questionnaire

The participants' scores for each question are tabulated in Table 2. It can be seen that questions 1, 3, 4, 7, 9 and 17 were answered incorrectly by most participants. Based on question 1, almost all participants (113, 95.76%) had a misconception that excessive consumption of sugar and sweet foods can result in diabetes. A large number of participants (79, 66.95%) thought that diabetes was caused by failure of the kidneys to keep sugar out of the urine. Almost as many participants (77, 62.25%) believed that diabetes was curable if they maintained a healthy lifestyle paired with a healthy diet and adhering to their medications. Many participants (71, 60.17%) thought that doing a urine test was the best way to check their diabetes. Fewer participants (47, 39.83%) were confused that sweating and shaking are signs of hypoglycaemia, and 41 (34.75%) were uncertain or did not know that frequent urination and thirsts are signs of hyperglycaemia.

Table 2. Number of participants with correct answers to the questions in diabetes knowledge questionnaire.

Questions	n (%)
1. Eating too much sugar and other sweet foods is a cause of diabetes.	5 (4.24)
2. The usual cause of diabetes is lack of effective insulin in the body.	77 (65.25)
3. Diabetes is caused by failure of the kidneys to keep sugar out of the urine.	39 (33.05)
4. Kidneys produce insulin.	33 (28.21)
5. In untreated diabetes, the amount of sugar in the blood usually increases.	114 (96.61)
6. If I am diabetic, my children have a higher chance of being diabetic.	83 (70.34)
7. Diabetes can be cured.	41 (34.75)
8. A fasting blood sugar level of 11.7 mmol/L is too high.	109 (92.37)
9. The best way to check my diabetes is by testing my urine.	47 (39.83)
10. Regular exercise will increase the need for insulin or other diabetic medication.	80 (67.80)
11. There are two main types of diabetes: Type 1 (insulin-dependent) and Type 2 (non-insulin-dependent).	71 (60.17)
12. An insulin reaction (severe hypoglycemia) is caused by too much food.	97 (82.20)
13. Medication is more important than diet and exercise to control my diabetes.	58 (49.15)
14. Diabetes often causes poor circulation.	69 (58.47)
15. Cuts and abrasions on diabetics heal more slowly.	98 (83.05)
16. Diabetics should take extra care when cutting their toenails.	105 (88.98)
17. A person with diabetes should cleanse a cut with iodine and alcohol.	29 (24.58)
18. The way I prepare my food is as important as the foods I eat.	92 (77.97)
19. Diabetes can damage my kidneys.	109 (92.37)
20. Diabetes can cause loss of feelings in my hands, fingers, and feet.	90 (76.27)
21. Shaking and sweating are signs of high blood sugar.	71 (60.17)
22. Frequent urination and thirst are signs of low blood sugar.	77 (65.25)
23. Tight elastic hose or socks are not bad for diabetics.	65 (55.08)
24. A diabetic diet consists mostly of special foods.	75 (63.56)

The mean score for the DKQ is 14.69 (SD= 3.81). The maximum score for DKQ is 24 where 0 is the minimum. A higher score in the DKQ indicates better knowledge of the disease. As seen in Figure 1, the distribution is skewed to the right which demonstrates that more participants scored higher than the mean score, suggesting that there are more participants with above average diabetes knowledge.

3.3. Medication Knowledge

A majority of the participants were unable to name their antidiabetic medications (102, 46.44%). Slightly fewer of the participants (50, 42.37%) did not know the indication of their antidiabetic medications. Most participants were able to demonstrate the correct way to take their antidiabetic medications (87, 73.73%), which include correct dose, correct frequency and correct route of administration. Almost all participants knew the correct timing for their antidiabetic medications (113, 95.76%). However, it was discovered that 82 (69.49%) participants did not know of any possible side effects of their antidiabetic medications. Nevertheless, more than half of the participants knew what to do in case they experience any side effects (73, 61.86%). The question “Do you know what to do if you miss a dose of your medication(s)?” was not included in the calculation for the score of medication knowledge, however it was discovered that 94 (79.66%) knew what to do in the case of missing a dose of their antidiabetic medications.

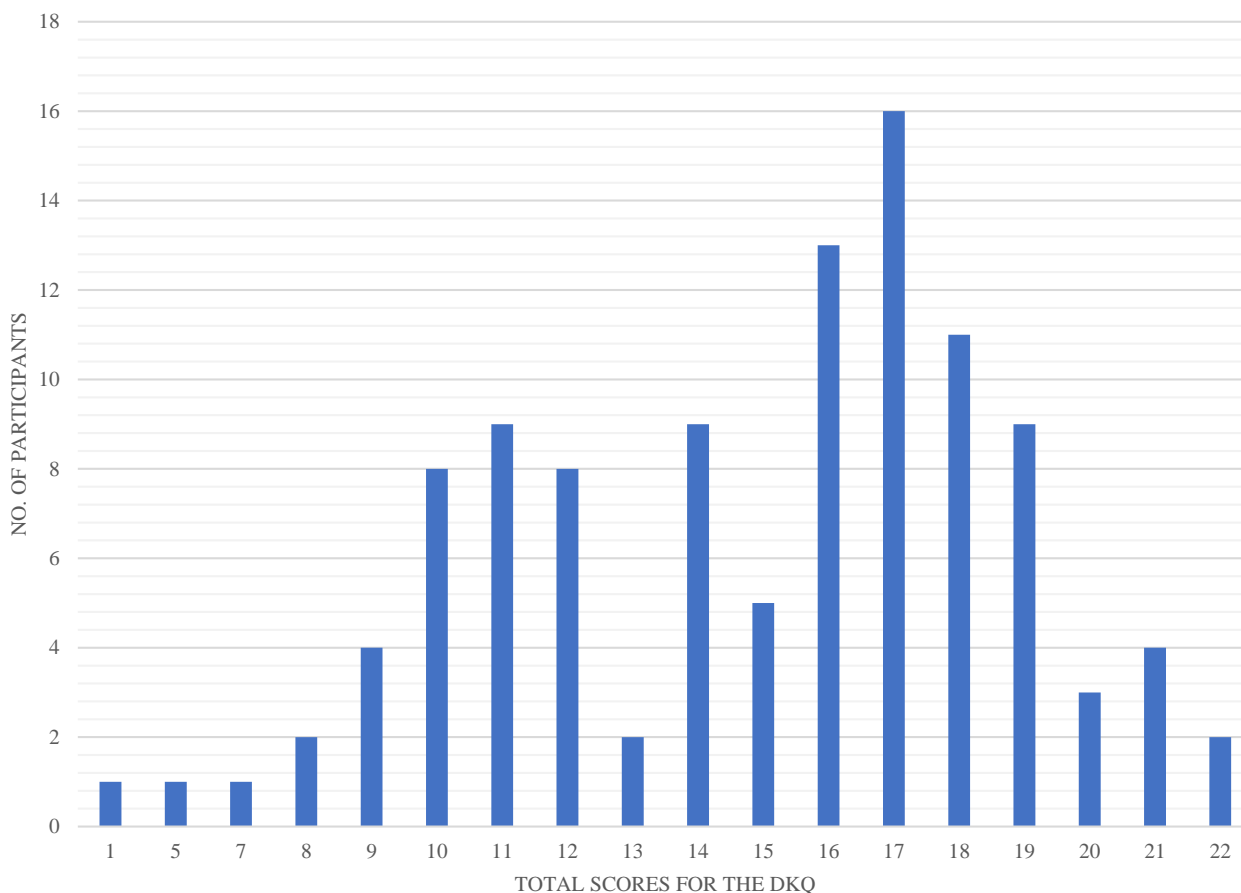


Figure 1. Distribution of number of participants and their total scores for the diabetes knowledge questionnaire.

The maximum score for the medication knowledge questionnaire was 7 and the minimum was 0. The mean score for this questionnaire was 3.37 (SD = 1.38) and the distribution for medication knowledge is shown in Figure 2.

3.4. Medication Adherence

A large proportion of the participants admitted that they did not adhere to their antidiabetic therapy due to various reasons (74, 62.71%). A majority of the non-adherent participants revealed that forgetfulness was the culprit (64, 86.49%). A few of them stated that side effects were the cause of their non-adherence (12, 16.22%). Some also had reasons other than the one listed in the questionnaire (16, 21.62%) which included: no stock of medications at home, not taking medications and/or reducing the dose when feeling better, busy schedule, bitter taste, and not wanting to rely on medications.

Most participants did not monitor their blood glucose regularly (89, 75.42%). Some claimed that this was due to the cost burden of the needles which were single use only. Due to COVID-19 restrictions, borders to other countries were closed which hindered the participants from purchasing the needles from those countries with a lower currency rate. Almost all participants claimed to know the importance of their antidiabetic medications (116, 98.31%). Only a small proportion of the participants claimed that their doctor did not provide information on diabetes (23, 19.49%), but the information was given to them by their dietitian and/or nurses. However, more than half revealed that their doctor did not give information on their antidiabetic medications (56, 47.46%). This is because the doctor told them that the pharmacists and/or dispensers would counsel them on their medications so the doctor did not give any further details regarding their medications. Most participants were not involved in their treatment decision (71, 60.17%). For those

who were involved in the treatment decisions, it was mainly in regard to the initiation of insulin therapy. Participants were asked whether they were willing to be started on insulin and this is where their decision is involved. Almost all participants reported that they felt comfortable asking questions to their doctors in regard to their health conditions and/or medications (105, 88.98%).

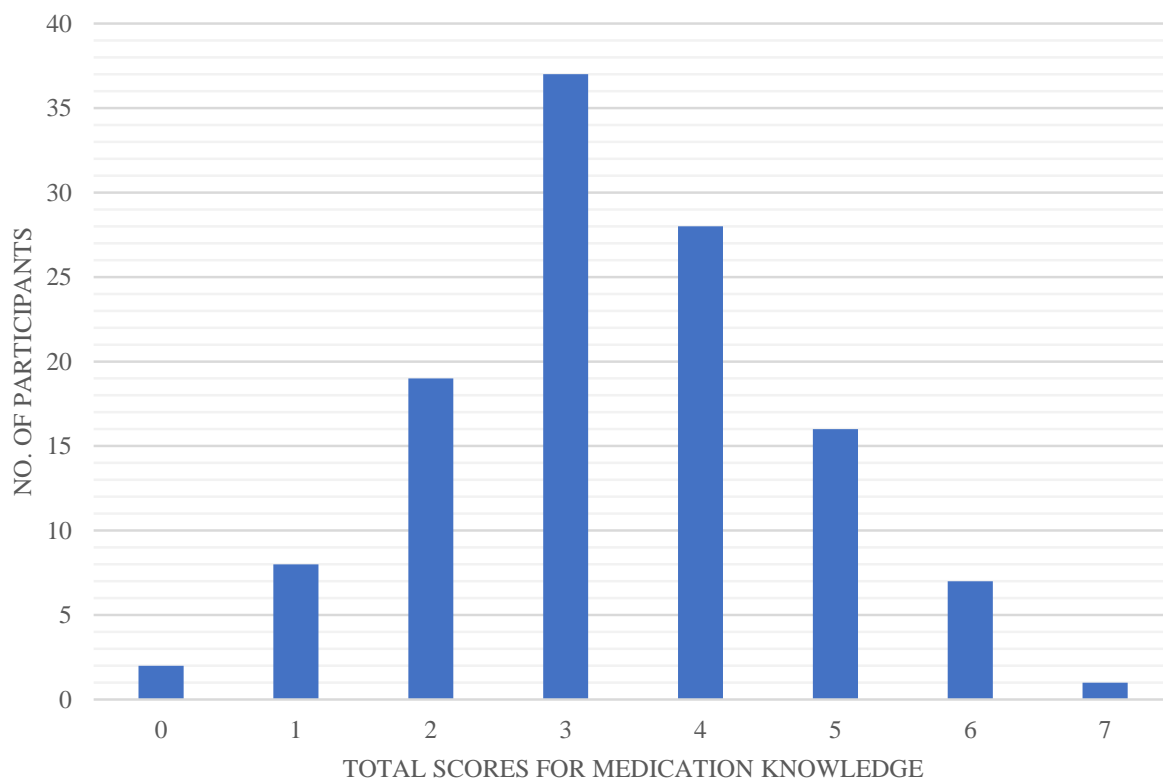


Figure 2. Distribution of the number of participants and their scores for the medication knowledge questionnaire.

One of the aims of this study was to evaluate the relationship between demographic variables, diabetes knowledge, medication knowledge and medication adherence. Their correlation has been measured as tabulated in Table 3.

Table 3. The significant relationship between the variables.

	<i>p</i> -Value and CI	Correlation Coefficient
Diabetes knowledge with:		
Education level	<0.05 (95% CI: 0.002, 0.352)	0.183
Family history	<0.05 (95% CI: −0.381, −0.036)	−0.215
Total medications taken	<0.05 (95% CI: 0.004, 0.354)	0.185
Medication knowledge with:		
Gender	<0.05 (95% CI: 0.031, 0.377)	0.211
Family history	<0.05 (95% CI: −0.227, 0.133)	−0.215
Total medications taken	<0.05 (95% CI: −0.469, −0.143)	−0.315
Medication adherence with:		
Race	<0.05 (95% CI: −0.397, −0.05)	−0.233

4. Discussion

The study was carried out to measure the medication knowledge and medication adherence among patients with T2DM in Brunei Darussalam regarding their antidiabetic medications. Diabetes mellitus is the third leading cause of death in Brunei Darussalam with a prevalence of 9.7% [4]. In 2017, the disease contributed to 10.1% of the total deaths in the sultanate. Due to the extensive nature of diabetes within Brunei Darussalam, one of the initiatives taken to minimize patients' exposure to unwanted complications of diabetes is to ensure their adherence to antidiabetic medication [21].

For the diabetes knowledge questionnaire, a majority of the participants thought that excessive sugar intake can result in diabetes (113, 95.76%). Albeit the fact that consuming sweets can raise the blood glucose level, diabetes is a metabolic disorder in which severe hyperglycaemia is one of its markers [1]. The misconception for this question may be due to its vagueness. Lifestyle changes have been associated with increased risk of developing type 2 diabetes. Due to this, participants might have misconstrued the concept of excessive consumption of sweets leading to diabetes [22]. Participants also demonstrated that they thought the kidneys played an important role in the development of diabetes. This misconception can be due to the fact that kidney disease is a common yet dangerous complication in people with type 2 diabetes [23]. A number of participants agreed that testing the urine is the best way to check for diabetes (71, 60.17%). This could be due to the fact that some participants claimed that they can estimate the state of their glucose level by observing their urine upon urinating in which foamy urine indicates that their glucose level is on the higher end [24]. There were several participants who were confused with signs of hypoglycaemia and hyperglycaemia (39.83% and 34.75% respectively). Knowing the signs of hypoglycaemia and hyperglycaemia is important in patients with diabetes as these would guide them into making the right and safe decision, i.e. to take their medications or to consume more sweets [25].

A cross-sectional study was conducted in three health centres in Pakistan utilizing the Starr County Diabetes Knowledge Questionnaire in the Urdu language. The study revealed that diabetes knowledge was significantly correlated with the participants' gender, level of education, family history of diabetes and their antidiabetic therapy ($p < 0.05$) [26]. Based on a self-administered questionnaire-based study done in Malaysia by Abbasi et al. in 2018, it was discovered that the largest proportion of the participants (47.7%) exhibited moderate levels of diabetes knowledge. The diabetes knowledge was tested using the Translated Michigan Diabetes Knowledge Test (MDKT). In this study, factors that were significantly associated with diabetes knowledge included age, race, education level, occupation and the nature of the antidiabetic therapy [27,28]. As seen in Table 3, diabetes knowledge has been shown to be significantly correlated with education level, family and total medications taken. The higher the education level that the participants received, the higher they scored on the diabetes knowledge questionnaire ($p = 0.048$, $r = 0.183$). This trend can also be supported by the studies done by Bukhsh et al. (2019) and Abbasi et al. (2018) [26,27]. Family history of diabetes has shown a significant inverse correlation with diabetes knowledge history ($p = 0.019$, $r = -0.215$). This result can be interpreted as participants with known family history of diabetes to have better knowledge of the disease which was also observed by Bukhsh et al. (2019) [26]. There is also a significant relationship between the number of medications that the participants were taking and their diabetes knowledge score ($p = 0.045$, $r = 0.185$). Participants who were taking more medications scored higher on the diabetes knowledge questionnaire.

As for medication knowledge, a good level of knowledge is indicated by a score of ≥ 5 . The mean score for the medication knowledge was 3.37 ± 1.38 , which suggests that most of the participants have a subpar level of knowledge in regard to their antidiabetic medications. Only 24 participants (20.34%) had a score of ≥ 5 . Most participants (102, 86.44%) were not able to name all of their antidiabetic medications and 82 participants (69.49%) were not aware of any possible side effects that may be caused by their antidiabetic medications. As polypharmacy is common amongst the participants with the mean of total

medications taken of 7.36 ± 2.87 , it is not surprising that most of the participants were not able to name all of their antidiabetic medications as well as their side effects. However, as hypoglycemia is a familiar phenomenon to those taking antidiabetic medications, it is important for patients to acknowledge this orthodox side effect in order for them to correct it appropriately. Effective communication between the doctor and patient is important to tackle the risk of hypoglycemia due to possible misinterpretation of the therapy and to reduce episodes of hypoglycemia [29]. A small group of the participants did not know the correct way to take their antidiabetic medications. It was observed that the majority of those who answered wrongly were still following their old medication regimen prior to the changes. The wrong administration may result in medication misuse and adverse drug reactions [30]. Gender, family history of diabetes and total medications taken have a significant effect on the participants' medication knowledge score. Women have shown to have better knowledge of their medications in comparison to men ($p = 0.022$, $r = 0.211$). Participants with family history of diabetes scored higher on the medication knowledge questionnaire as opposed to those with no known background ($p = 0.019$, $r = -0.215$). Having a higher number of total medications taken have resulted in participants scoring lower on the medication knowledge questionnaire ($p = 0.001$, $r = 0.315$).

In this study, non-adherence was observed in a majority of the participants (74, 62.71) with forgetfulness being the main culprit (64, 86.49%). As a lot of the patients were on polypharmacy, receiving excessive information on their medications may result in difficulties to retain vital information, thus leading to forgetfulness [31]. Medication adherence is only significantly correlated with race ($p = 0.011$, $r = -0.233$). The negative correlation here implies that those who are of non-Malay race are more likely to be non-adherent to their regimen. This could be due to language barrier or cultural differences. A study conducted in Iran which studied medication adherence amongst patients with type 2 diabetes using the Morisky Medication Adherence Scale (MMAS-8) had observed moderate adherence for most of the participants (59.12%) whereas 27.2% of the participants showcased low adherence to their medication regimen. Age was one of the significant factors for medication adherence in the study [21].

This study revealed that there is no significant association between diabetes knowledge, medication knowledge and medication adherence. A study in 2018 also demonstrated the same hypothesis whereby no significant correlation had been discovered between diabetes knowledge and medication adherence [32]. However, there have been studies conducted which support the notion that diabetes knowledge and medication adherence are significantly correlated. As such, one of the studies in 2020 discovered that there is a positive correlation, albeit weak, between diabetes knowledge and medication adherence in patients with type 2 diabetes ($p < 0.01$) [33]. A study in 2011 also revealed that subpar knowledge on diabetes was associated with a lower rate of medication adherence [34]. Furthermore, two studies found that medication knowledge is a significant predictor for medication adherence ($p < 0.001$) [15,16]. In this present study, there is a lack of significant correlation between medication knowledge and medication adherence. Various factors may have resulted in this outcome. Some participants with below satisfactory medication knowledge had shown adherence to their medications as their medication regimen had been planned out through a pill box or through the help of family members. Furthermore, due to the absence of a financial burden on the participants' side in obtaining their medications, this may have played a role in the participants' medication adherence.

The reported mean rate of non-adherence in developed countries is only 50% whereas the rate is higher in developing countries. In this study, the rate of non-adherence was 62.71% which concurs with the hypothesis as Brunei Darussalam is a developing country [35]. Nevertheless, initiatives should be taken in order to ameliorate adherence in these patients. One of the incentives was setting a reminder for patients to take their medications, especially as forgetfulness was the main reason for non-adherence in this present study. The reminder method can be done through various ways such as via text messages and mobile phone applications [36,37]. Another intervention which has been proven to promote

adherence is personalized patient education, such as informing patients regarding their individualized risks presuming non-adherence to their treatment [36]. Multifaceted and personalized pharmacist interventions, such as simplifying treatment regimes, have been shown to be effective in aiding patients to adhere to their medications [38]. Strengths, limitations and implications for practice.

The whole sample was interviewed by the same researcher which ensured that the consistency of data collection was maintained. Furthermore, since the interview was administered with the assistance of a single researcher, this allowed participants to clarify any questions that needed clarity.

This study, like other studies, also has some inherent limitations. This study relies on the self-reporting method for the medication adherence questionnaire which may result in recall bias and lack of transparency, thus affecting the actual rate of medication adherence. Moreover, the study was done in only one hospital in Brunei Darussalam which may have affected the scope of the participants. However, this study is able to generalize to the whole Brunei because the included sample was representative of the demographic of the Bruneian population. The present study also lacks access to more sociodemographic details such as BMI, socioeconomic status, nutritional status, and glucose level. The participants in this study were selected through a convenience sampling which may have resulted in selection bias.

5. Conclusions

Medication knowledge and medication adherence amongst T2DM patients in Brunei Darussalam were examined in this study. It was discovered that a majority of the patients had subpar knowledge regarding their antidiabetic medications. Additionally, it was revealed that almost two-thirds of patients were non-adherent to their T2DM medication. It was discovered that diabetes knowledge was significantly associated with education level, family history and total medications taken. Medication knowledge was significantly linked with gender, family history and total medications taken. Medication adherence was significantly correlated with race. There was, however, no significant correlation between diabetes knowledge, medication knowledge and medication adherence. Despite the lack of correlation, the level of medication knowledge and rate of non-adherence were considerably high. There have been strategies implemented with the aim to mitigate these issues, including the use of mobile phone applications for reminders and personalized patient education. Nonetheless, review and augmentation of these strategies are required in order to maximize their efficacy and efficiency. For future studies, assessing further relevant components, for instance BMI, blood glucose level and diet, may provide greater insights and understanding in regard to the correlation between medication knowledge and adherence.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/ijerph19127470/s1>. Supplementary Information: Data collection form [13]. Table S1. Diabetes Knowledge Questionnaire [13,16,17]. Table S2. Diabetes Medication Knowledge Questionnaire. Table S3. Diabetes Medication Adherence Questionnaire.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Institute of Health Sciences Research Ethics Committee, Universiti Brunei Darussalam (UBD/PAPRSBIHSREC/2021/75; date of approval: 23 January 2022).

Conflicts of Interest: The authors declare no conflict of interest.

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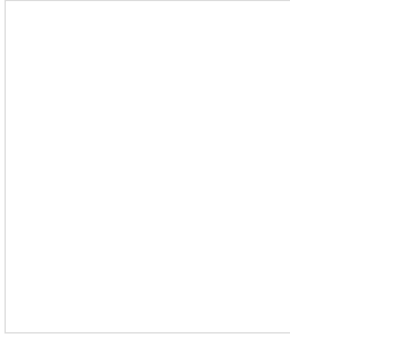
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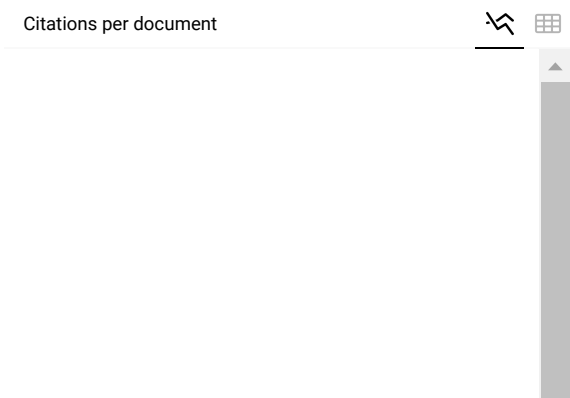
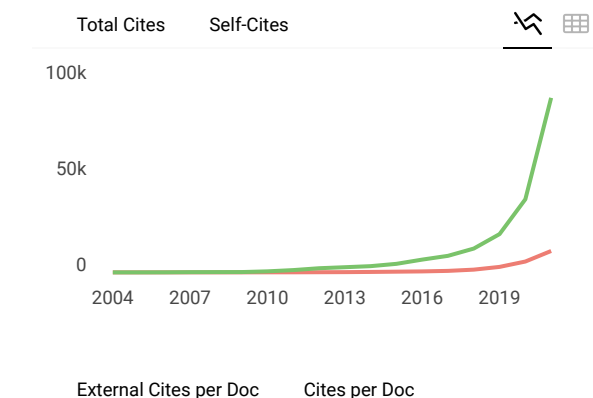
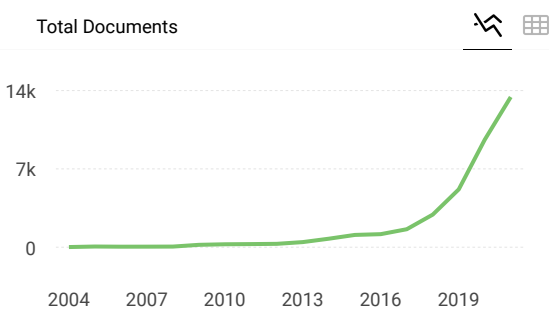
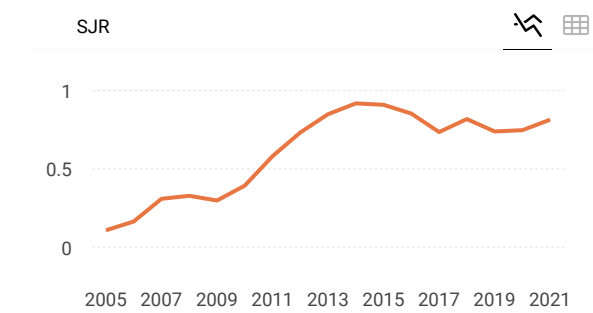
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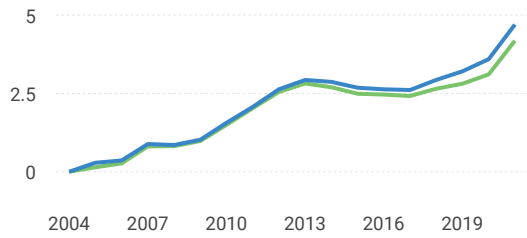


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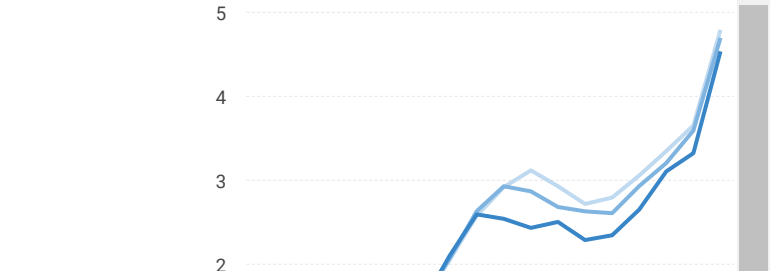
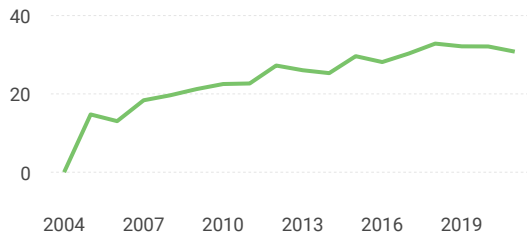
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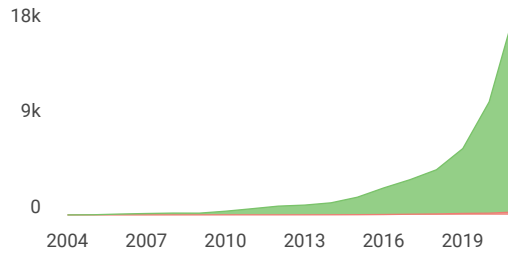


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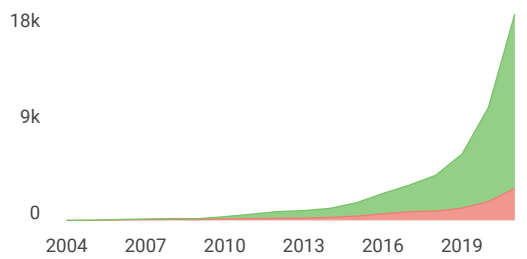
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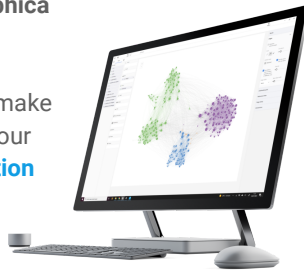
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RE: 18B3082 Research Ethics Approval Application

IHS Research Ethic Committee

Sun 1/23/2022 11:35 PM

To: Najwa Hazwani Binti Muhammad Haskani <18b3082@ubd.edu.bn>;

Cc: Dr Goh Poh Hui <pohhui.goh@ubd.edu.bn>; Dr Long Chiau Ming <long.ming@ubd.edu.bn>; daniel.wee@moh.gov.bn <daniel.wee@moh.gov.bn>;

Dear Researchers,

Your research resubmission was reviewed for your responses to the comments/conditions placed upon the ethical approval for your research. Your proposal is now deemed to meet the requirements, and **full ethical approval has been granted**. The approval letter will be ready for collection from the IHS Administrative Office in seven (7) working days.

Dear Admin,

Please find below the details for the Ethics approval letter.

Ethics Reference Number	UBD/PAPRSBIHSREC/2021/75
Name	Najwa Hazwani binti Muhammad Haskani
Registration number	18B3082
Programme	BHSc (Pharmacy)
Title of project	"Measurement of medication knowledge and adherence in type 2 diabetes mellitus patients in Brunei"
Committee	IHSREC
Validity Period	January 2022- April 2022

Reminder:

A gentle reminder to comply with the guidelines set by the Ministry of Health Brunei Darussalam when carrying out any face-to-face contact to prevent the spread of Covid-19.

Kindly update the committee if modifications to the data collection approach is needed before proceeding with the study.

Best wishes,

Dr Sheikh Naeem Shafqat, PhD

Chairperson of IHS Research Ethics Committee

Sent from [Mail](#) for Windows

From: [Najwa Hazwani Binti Muhammad Haskani](#)

Sent: 23 January 2022 17:16

To: [IHS Research Ethic Committee](#)

Cc: [Dr Goh Poh Hui](#); [Dr Long Chiau Ming](#); daniel.wee@moh.gov.bn

Subject: Re: 18B3082 Research Ethics Approval Application

Dear IHS Research Ethic Committee,

The reference number for this resubmission is **UBD/PAPRSBIHSREC/2021/75**. The title of the project is "Measurement of medication knowledge and adherence in Type 2 Diabetes Mellitus patients in Brunei". Attached to this email is the ethics application resubmission with all the amendments in red color and highlighted. Attached to this email are also the letters of permission from all relevant authorities:

1. Department of Pharmaceutical Services
2. Suri Seri Begawan Hospital

Thank you.

Najwa Hazwani Binti Muhammad Haskani,
18B3082,
Pharmacy Cohort 3,
PAPRSB IHS UBD

From: IHS Research Ethic Committee

Sent: Friday, November 19, 2021 10:24:18 PM

To: Najwa Hazwani Binti Muhammad Haskani

Cc: Dr Goh Poh Hui; Dr Long Chiau Ming; daniel.wee@moh.gov.bn

Subject: RE: 18B3082 Research Ethics Approval Application

Dear Researchers,

Ref: [UBD/PAPRSBIHSREC/2021/75](#)

Thank you for the clarification.

All amendments are now in order. For **full approval** of your study, please submit letters of permission from all the relevant authorities, as mentioned in the proposal, once available.

Thank you.

Best wishes,

Dr Sheikh Naeem Shafqat, PhD
Chairperson of IHS Research Ethics Committee

Sent from [Mail](#) for Windows

From: [Najwa Hazwani Binti Muhammad Haskani](#)

Sent: Thursday, November 18, 2021 9:37 AM

To: [IHS Research Ethic Committee](#)

Cc: [Dr Goh Poh Hui](#); [Dr Long Chiau Ming](#); daniel.wee@moh.gov.bn

Subject: Re: 18B3082 Research Ethics Approval Application

Dear IHS Research Ethic Committee,

Reference no.: UBD/PAPRSBIHSREC/2021/75.

I have amended the documents accordingly, please see attached.

Thank you.

Najwa Hazwani Binti Muhammad Haskani,
18B3082,
Pharmacy Cohort 3,
PAPRSB IHS UBD

From: IHS Research Ethic Committee
Sent: Monday, November 15, 2021 3:34:16 PM
To: Najwa Hazwani Binti Muhammad Haskani
Cc: Dr Goh Poh Hui; Dr Long Chiau Ming; daniel.wee@moh.gov.bn
Subject: RE: 18B3082 Research Ethics Approval Application

Dear Researcher,

Please incorporate your amendments inside the proposal document.

Thank you.

Best wishes,

Dr Sheikh Naeem Shafqat, PhD
Chairperson of IHS Research Ethics Committee

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From: [Najwa Hazwani Binti Muhammad Haskani](#)
Sent: Monday, November 15, 2021 3:01 PM
To: [IHS Research Ethic Committee](#)
Cc: [Dr Goh Poh Hui](#); [Dr Long Chiau Ming](#); [daniel.wee@moh.gov.bn](#)
Subject: Re: 18B3082 Research Ethics Approval Application

Dear IHS Research Ethic Committee,

Reference no.: UBD/PAPRSBIHSREC/2021/75.

Just to clarify the the following points:

1. Related to the previous comment (no 20th) from the IHSREC member - How will own the ownership of the data? **The data will be owned by Universiti Brunei Darussalam and Ministry of Health, Brunei.**
2. Second thing which requires clarification, related to the same comment (no 20th)- How long the data will be kept after the study, and who will be responsible of disposing of the data after a specified time?
The data obtained will be destroyed by researchers after 5 years of completion of the study.

I apologize for having overlooked these points beforehand. All letters of permission from all the relevant authorities will be submitted once available.

Thank you.

Najwa Hazwani Binti Muhammad Haskani,

18B3082,
Pharmacy Cohort 3,
PAPRSB IHS UBD

From: IHS Research Ethic Committee
Sent: Monday, November 15, 2021 12:31:17 PM
To: Najwa Hazwani Binti Muhammad Haskani
Cc: Dr Goh Poh Hui; Dr Long Chiau Ming; daniel.wee@moh.gov.bn
Subject: RE: 18B3082 Research Ethics Approval Application

Dear Researchers,
Ref: UBD/PAPRSBIHSREC/2021/75
Thank you for the clarification.

Most of the amendments are now in order. But IHSREC still requires you to clarify the following points,

- 1) Related to the previous comment (no 20th) from the IHSREC member - How will own the ownership of the data?
- 2) Second thing which requires clarification, related to the same comment (no 20th)- How long the data will be kept after the study, and who will be responsible of disposing of the data after a specified time?

For full approval of your study, please submit letters of permission from all the relevant authorities, as mentioned in the application, once available.

Thank you
Best wishes,
Dr Sheikh Naeem Shafqat, PhD
Chairperson of IHS Research Ethics Committee

Sent from [Mail](#) for Windows

From: [Najwa Hazwani Binti Muhammad Haskani](#)
Sent: Sunday, October 24, 2021 4:30 PM
To: [IHS Research Ethic Committee](#)
Cc: [Dr Goh Poh Hui](#); [Dr Long Chiau Ming](#); [daniel.wee@moh.gov.bn](#)
Subject: Re: 18B3082 Research Ethics Approval Application

Dear IHS Research Ethic Committee,

I am Najwa, a fourth year Pharmacy student doing a final year project for the module HP-4238: Research Project. The reference number for this resubmission is **UBD/PAPRSBIHSREC/2021/75**. The title of the project is "Measurement of medication knowledge and adherence in Type 2 Diabetes Mellitus patients in Brunei". Attached to this email is the ethics application resubmission with all the amendments in red colour and highlighted.

Thank you.

Najwa Hazwani Binti Muhammad Haskani,
18B3082,
Pharmacy Cohort 3,
PAPRSB IHS UBD

From: IHS Research Ethic Committee
Sent: Saturday, September 25, 2021 9:45:07 PM
To: Najwa Hazwani Binti Muhammad Haskani
Cc: Dr Goh Poh Hui; Dr Long Chiau Ming; daniel.wee@moh.gov.bn
Subject: Re: 18B3082 Research Ethics Approval Application

Dear Researchers,

Ref no: **UBD/PAPRSBIHSREC/2021/75**

Thank you for your ethics application submission.

The Ethics Committee has reviewed your application and has given **Conditional Approval**. Please refer to the attached comments.

Important note: When replying, (a) please use this email thread and (b) include all supervisors in the corresponding email.

Thank you

Best wishes,

Dr Sheikh Naeem Shafqat, PhD
Chairperson of IHS Research Ethics Committee

From: Najwa Hazwani Binti Muhammad Haskani
Sent: 24 August 2021 14:44:45
To: IHS Research Ethic Committee
Cc: Dr Goh Poh Hui; Dr Long Chiau Ming; daniel.wee@moh.gov.bn
Subject: 18B3082 Research Ethics Approval Application

Dear IHS Research Ethic Committee,

I am Najwa, a fourth year Pharmacy student doing a final year project for the module HP-4238: Research Project. The title of the project is "Measurement of medication knowledge and adherence in Type 2 Diabetes Mellitus patients in Brunei". Attached to this email is the research ethics approval application.

Thank you.

Najwa Hazwani Binti Muhammad Haskani,
18B3082,
Pharmacy Cohort 3,
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