OPEN LETTER

Occupational therapy: The key to unlocking locked-up occupations during the COVID-19 pandemic [version 1; peer review: 1 approved, 3 approved with reservations]

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Abstract
Occupations refer to the everyday activities that people do as individuals, in families and with communities to occupy time and bring meaning and purpose to life. It is not always limited to just paid employment. Occupations of the global population have been adversely affected in one way or the other because of this COVID-19 pandemic. Four different key sects of occupations were majorly affected. These are the occupations of those who are or were COVID-positive, occupations of healthy individuals affected by COVID-19/lockdown, occupations of the population highly susceptible and vulnerable of contracting COVID-19 and occupations having a direct impact on global market, supply chain or economy. These occupations were locked up due to the pandemic lockdown.

Occupational therapists can scientifically analyse occupations and help formulate exit strategies for the lockdown. They are experts who understand and study the different ways of measuring participation in occupation to develop innovative strategies and therapeutic interventions to facilitate individuals' engagement in occupations. They can unravel the pragmatic strategies for preventing transmission (physical distancing, hand hygiene, personal protective equipment usage and decontamination) despite engaging in occupations safely and effectively. Nourishing this niche and essential science is pertinent, not just in this pandemic context but also against a backdrop of health and social care research, policy, practice and education for the future.

Keywords
Occupational Science, Occupational Therapy, Covid-19, Pandemic, Lockdown Coronavirus, Activity Analysis, Occupations

Open Peer Review

Invited Reviewers
1. Lakshmanan Sethuraman, National Institute of Mental Health and Neurosciences, Bengaluru, India
2. Ashish S. Macaden, Raigmore Hospital, University of Aberdeen, Centre for Rural Health, Inverness, UK
3. Lynette Mackenzie, University of Sydney, Sydney, Australia

Any reports and responses or comments on the article can be found at the end of the article.
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Author roles: Kamalakannan S: Conceptualization, Formal Analysis, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing; Chakraborty S: Conceptualization, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing

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The word “occupation” in layman’s terms refers to any activity that an individual meaningfully engages with, in his everyday living. Scientifically, “occupations refer to the everyday activities that people do as individuals, in families and with communities to occupy time and bring meaning and purpose to life. Occupations include things people need to, want to and are expected to do”[2]. Both ways, the term covers everything that an individual does in his/her life from womb to tomb. However this term is globally misunderstood to be related only to paid employment and having socio-cultural dimensions of normality[1]. In simple terms some occupations are considered appropriate in certain cultures and not in others[3].

The recent coronavirus disease 2019 (COVID-19) pandemic has made a devastating impact disrupting global equilibrium of sustainable development and meaningful occupations that define the lives of millions of people worldwide[4]. Researchers, scientists, policy-makers and politicians around the world have been left overwhelmed with the number of deaths due to COVID-19. However, the attention given to affected individuals’ occupations as defined above has remained absolutely meagre in comparison[5].

Occupations of the global population have been adversely affected because of this pandemic[6]. Children are unable to play in the park with their peers or study at school, adults are unable to cope with adjusting their schedules while working from home, with home schooling and children around. A significant proportion of this occupational struggle can be found especially in low- and middle-income countries where several of the poorest have lost their only source of income, while such countries continue to remain sparse in terms of resources when compared to high-income countries[7]. The elderly, being considered more vulnerable are being shielded from what they might consider as meaningful occupations like visiting their grandchildren, engaging in social activities and leisure. Overall, the pandemic and onset of the lockdown globally has not just locked up all of us in our homes, but also confined and restricted us in carrying out our occupations[8].

A deeper reflection of the pandemic and lockdown unravels four different key sects of occupations that have been eyed upon by politicians, expert scientists and activists to be rescued. These are the occupations of those who are or were COVID-positive, occupations of healthy individuals affected by COVID-19/lockdown, occupations of the population highly susceptible and vulnerable of contracting COVID-19 and occupations having a direct impact on global markers, supply chain or economies. The impact that each sect of occupations has gone through and continues to go through is very different. Similarly, the implications as well; some occupations have financial, some health, some political while others seem to have policy implications. However, a potential enabler to the derived solutions that stakeholders across multiple levels have failed to identify is to seek the key to unlock these occupations[9].

The key is the science of occupation, and the experts who know how to use the key to unlock occupations are highly trained healthcare professionals—occupational therapists—who have immense expertise in field of occupational science and therapy[10]. Occupational science is a science related to studying occupations in which humans participate. Occupational science and therapy often focus on specific populations who have unique challenges to participate in meaningful occupations. Occupational therapists are experts in this field who understand and study the different ways of measuring participation to develop innovative strategies and therapeutic interventions to facilitate individuals’ engagement in occupations. They also study different ways of measuring participation to develop innovative interventions that enable occupational engagement, thereby preventing the negative effects of diseases and disability and ultimately promoting the positive impact of participation in occupations on an individual’s health and well-being[11].

Occupational therapists use a fundamental and powerful tool to help individuals re-engage in occupations, known as activity analysis[12]. It is the process of identifying inherent properties in any given occupation as well as the skills and abilities to complete it. Occupational therapists deconstruct a single occupation into many components to see the best fit of individual needs, capabilities, activity characteristics in the actual environment or context of their survival, thereby optimising successful performance of a particular occupation when an individual cannot meaningfully engage in it[13].

The current global pandemic and lockdown has propelled scientists, researchers, politicians, policymakers and various other stakeholders to come up with immediate and sustainable long-term solutions. Recommendations and guidelines from various global and national-level stakeholders/organisations on the pandemic and lockdown have been looking at various targeted, multi-phased strategies to unlock occupations. Though “Exit strategy” may be the term used by these stakeholders for that purpose, these interventions indirectly target unlocking occupations from the pandemic lockdown, with the aim of helping people across ages engage in meaningful occupations enable sustainable global development[14,15].

Occupational therapists can scientifically analyse occupations and crack the code to such exit strategies. They can do so by:

1. Assisting in the process of classifying occupations that are at higher, moderate and lower risk for infection transmission, prioritising those occupations that could be unlocked for specific social, economic or well-being purposes as required.

2. Providing scientific knowledge and support to reduce, prevent and control transmission of COVID-19 while engaging in any occupation. Occupational therapists can analyse occupations those are at higher risk for spread and transmission such as accessing public transport facilities including bus, train, ferry and flights and
they can identify potential solutions to safely restart these services with utmost precautions to prevent transmission. Occupational therapists can provide pragmatic solutions to ensure physical distancing, hand hygiene and use of personal protective equipment (PPE) while individuals adapt or modify their occupations within their usual environments. Given their skills for environmental adaptations and modifications, creative solutions put forward by occupational therapists could be potentially feasible to implement while exiting the lockdown.

3. Having an imperative role in synergising public health efforts focused on safe practices in multiple contexts, such as hospitals, care homes, rehabilitation centres and special schools where they are employed. Since occupational therapists are professionally trained in the field of healthcare practice and research, they also have a key role to play on the frontlines by contributing towards improving patient outcomes in the management of COVID-19, alongside physicians, nurses and other allied health professionals.

4. Exploring options for remediation and adaptation in case of complicated occupations. For example: In order to restart schooling services, occupational therapists can identify and analyse various occupations of the staff involved (teachers, administrators, support staff and their requirements within the environmental context) in order to provide strategies for ensuring safe and effective schooling.

5. Remediating issues related to adopting a common strategy like physical distancing for each occupation. The above example of a schoolteacher can be taken again: occupational therapists can provide guidance on how the teacher can ensure physical distancing while engaging in her/his primary task of taking a class as well as other secondary tasks such as meeting colleagues or supervising children participating in recess.

Occupational therapists can be of immense help in the rapid implementation of various public health solutions for behaviour change aiming to prevent and control the rate of infection spread among individuals globally. A plethora of assessment techniques used by occupational therapists, such as work flow analysis, assessing workspace design, performing risk assessments for specific kinds of activities demanded by each occupation could help understand the ways in which services can ensure safety and avoid risk of transmission when they restart. Though current behaviours are being moulded towards sustaining the “NEW NORMAL”, whether the new normal life has meaningful engagement of individuals for safe and healthy well-being is a million-dollar question.

It is high and critical time that every stakeholder involved in combating COVID-19 especially in low- and middle-income countries appreciate the under-represented and untapped scientific expertise that occupational therapists possess. Evidence suggests that there are only 0.03 occupational therapists per 100,000 people globally. Although a miniscule proportion of clinician scientists, they are not included in scientific or public health cadre for disease prevention, health promotion and rehabilitation, particularly in the health systems of the LMICs. Unlike high-income countries, this allied health workforce is not a part of the organized government health and social care system, even in globally emerging economies like China and India.

Occupational therapists therapeutically support persons with disabilities in general. Occupational therapy and science help people engage in meaningful occupations for their well-being. However, when we look at disability from a bio-psychosocial perspective, it is quite evident that the whole world is currently experiencing a temporary form of disability due to the pandemic. Nurturing this niche and essential science is pertinent, not just in the context of this pandemic but also against a backdrop of health and social care research, policy, practice and education for the future.

Data availability
No data are associated with this article.

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Open Peer Review

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Lynette Mackenzie  
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Abstract: I do not think that occupations are merely about occupying time, but are about enabling people to do the things they need to do, have to do and want to do. The word "sects" is not helpful. I think you mean "areas" here. Vulnerable "to" is clearer. Not all occupations were locked down - I think you can say a substantial number of valued occupations were locked up or reduced.

OTs may not be able to help people exit the lockdown if it is a government requirement. However, they can assist people in adapting their occupations and devise ways to find purpose and meaning in everyday activities where the environment is a barrier. Nourishing the niche does not make much sense to me. I think you are talking about occupational therapists suing their skills in a new area of practice? I'm sure other health professionals will assume they are contributing to preventing transmission!

Content: Not sure I like the phrase "womb to tomb" - sounds like a colloquial amusing phrase rather than the serious point you are making.

I think we are only just beginning to see the impact of recovery from COVID in terms of the occupations that are affected by the recovery process and the limitations in functioning that a lot of people in recovery experience.

Again the term "sects" is used - would suggest "areas" instead. "Eyed upon" would be better replaced by "recognised by", and "rescued" is misleading - should be "addressed". Be careful about claiming "immense" expertise - expertise is sufficient.

What about other points such as assisting people who are forced into isolation by government requirements to improve their health and wellbeing in these circumstances, and assisting people recovery from a COVI infection who are experiencing fatigue, breathlessness and reduced capacity to engage in occupations?
"It is a critical time" - sounds simpler.

Again "nurturing this niche" is not a good expression.

**Is the rationale for the Open Letter provided in sufficient detail?**  
Yes

**Does the article adequately reference differing views and opinions?**  
Yes

**Are all factual statements correct, and are statements and arguments made adequately supported by citations?**  
Yes

**Is the Open Letter written in accessible language?**  
Yes

**Where applicable, are recommendations and next steps explained clearly for others to follow?**  
Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Occupational therapy practice

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

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Review Report 28 July 2020

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- Ashish S. Macaden

  1 Rehabilitation Medicine and Stroke, Raigmore Hospital, Inverness, UK
  2 University of Aberdeen, Centre for Rural Health, Inverness, UK

This is a timely proposal for OT to take on an innovative role in Covid-19.

1. Differing views: The overlap with OT and the discipline of occupational health has not been addressed.
2. Accessible language: Their choice of words could be misinterpreted e.g. sects of professions (was it meant to be sets?) and the use of gendered words (layman, his or his/her).

3. Recommendations: The ability of OT to take on this role without specialist training is not discussed. The role of OT in addressing common sequelae of COVID-19 (fatigue, deconditioning) has not been discussed.

Is the rationale for the Open Letter provided in sufficient detail?
Yes

Does the article adequately reference differing views and opinions?
Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language?
Partly

Where applicable, are recommendations and next steps explained clearly for others to follow?
Partly

**Competing Interests:** I was a co-author with one of the authors in this article - we published a Cochrane review on vocational rehabilitation in brain injury in June 2017

**Reviewer Expertise:** Rehabilitation Medicine - Vocational rehabilitation, Gait analysis. Stroke - Prehospital ultrasound.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.
Article highlights the need for use of the skill possessed by the occupational therapists especially in terms of analysing the occupation. Adaptations in relation to environmental context in specific to architectural modifications to control the transmission is the need of the hour. It would have been more appropriate if the authors add:

1. The changes in relation to student seating in their example of school.

2. It is equally important for the occupational therapy practitioners use the opportunity to deliver in NEW NORMAL situations (while stressing on the need for nurturing this science).

**Is the rationale for the Open Letter provided in sufficient detail?**
Yes

**Does the article adequately reference differing views and opinions?**
Yes

**Are all factual statements correct, and are statements and arguments made adequately supported by citations?**
Yes

**Is the Open Letter written in accessible language?**
Yes

**Where applicable, are recommendations and next steps explained clearly for others to follow?**
Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Occupational Therapy, Psychosocial intervention in Substance use, Aftercare in Addiction, Telementoring

*I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.*

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Karthik Mani

1 National Board for Certification in Occupational Therapy, Gaithersburg, MD, USA
2 Vijaya Occupational Therapy Centre, Chennai, India
The authors did a great job of highlighting how occupational therapists (OTs) may contribute to easing occupational restrictions secondary to Coronavirus Disease 2019 (COVID-19) and related lockdown. Further, they underscored the OTs expertise in activity analysis and environmental modification and its implications for the current crisis in a thoughtful manner. The following may be considered to improve clarity and readability, which may increase the impact of the idea being discussed in this open letter.

The first sentence of the article states that ‘occupation’ in layman’s terms refers to all meaningful daily living activities. However, this statement is misleading. As stated by the authors in the same paragraph, the word ‘occupation’, in layman’s terms, generally refers to paid employment. The authors may consider replacing ‘layman’s terms’ with ‘the context of occupational therapy’ to add clarity to the opening sentence.

The sects of occupations described in this article do not appear to be distinct categories. For instance, ‘occupations having a direct impact on global market, supply chain or economy’ would also include ‘occupations of healthy individuals affected by COVID-19/lockdown’. The authors may elaborate more to improve clarity on how they perceive each of these sects as distinct categories. Further, they may underscore how OTs could contribute to each of this group more clearly.

In paragraph 3, the authors stated that ‘adults are unable to cope with adjusting their schedules while working from home’, which, is an overgeneralized assumption. Do all adults working from home secondary to COVID-19 find it difficult to cope up? The authors may consider softening the tone by adding a qualifier such as ‘several’, ‘many’, etc. Alternatively, they may add citations to support this generalizing phrase.

More focus on grammar, word conservation, use of punctuations, and consistent use of abbreviations is needed to improve clarity and readability. The authors may consider using readability statistics tools to assess and enhance readability.

Grammar - In a few places, the authors used past tenses. Given that the COVID-19 pandemic is still an ongoing crisis, past participle verb tenses would be more appropriate. Also, the authors may want to consider using conjunctions and articles effectively to improve the flow and readability.

Word conservation: In the fourth paragraph, the authors used ‘has gone through’ and added ‘continues to go through’ in a sentence. The second part is unnecessary as ‘has gone through’ captures the meaning. Further, several sentences could be rephrased to conserve words as wordy sentences minimize the impact of the idea being discussed.

Punctuations: Some long sentences could be punctuated with commas to improve readability. For example, in the penultimate paragraph, the phrase ‘especially in low- and middle-income countries’ could be placed between commas to break the sentence and improve readability.

Abbreviations: ‘Occupational therapists’ was used throughout the paper. The authors may have used the abbreviation ‘OTs’ after the first use and used the abbreviation throughout the paper. The penultimate paragraph shows an abbreviation (LMICs referring to Low- and middle-income countries) which was not previously identified in the paper. If the authors decide not to use abbreviations, then they should plan to remain consistent throughout the paper.
Typo: Point 3 under paragraph 8 has another ‘3’ (3. 3.), which needs to be deleted.

Is the rationale for the Open Letter provided in sufficient detail?
Yes

Does the article adequately reference differing views and opinions?
Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language?
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow?
Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** Occupational therapy, professional issues, rehabilitation, survey research

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.