Journal of Health Literacy and Qualitative Research
E-ISSN: 2775-7005
Volume. 1, Issue 2, September 2021
Page No: 84-98

Family Centered Approaches to Stunting Prevention

Fadly Umar
Institut Teknologi Kesehatan dan Bisnis Graha Ananda, Indonesia
Correspondent: fadlyumar07@gmail.com

Received : August 13, 2021
Accepted : September 24, 2021
Published : September 30, 2021

Citation: Umar, F. (2021). Family Centered Approaches to Stunting Prevention. Journal of Health Literacy and Qualitative Research, 1(2), 84-98.

ABSTRACT: Stunting remains a pressing global health concern, affecting millions of children worldwide. This study explores the role of family-based interventions in stunting prevention, focusing on maternal education, paternal involvement, household food security, and culturally integrated nutrition programs. A systematic review was conducted, analyzing studies from PubMed, Scopus, and Google Scholar to identify effective strategies for reducing stunting prevalence. The findings indicate that maternal education significantly influences child nutrition, as higher literacy levels lead to improved feeding practices. Paternal involvement also plays a crucial role, with engaged fathers contributing to healthier dietary choices and improved child growth outcomes. Additionally, household food security is strongly associated with reduced stunting risk, highlighting the importance of sustainable food production methods such as urban farming. Community-based interventions that incorporate local cultural practices enhance program effectiveness and acceptance. Despite these promising strategies, challenges such as time constraints for caregivers, inconsistent nutritional knowledge, and cultural barriers hinder implementation. Addressing these issues requires multi-sectoral approaches that integrate education, healthcare, and technological innovations in nutrition awareness. This study underscores the need for family-centered policies, digital nutrition tools, and expanded community health initiatives. Future research should focus on evaluating the long-term impact of these interventions to develop more sustainable solutions for reducing stunting rates globally.

Keywords: Stunting Prevention, Family-Based Intervention, Maternal Nutrition Education, Food Security, Community Health Programs, Child Growth, Nutrition Literacy.

INTRODUCTION

Stunting, defined as impaired linear growth due to chronic malnutrition, has emerged as a pressing public health issue, particularly in low- and middle-income countries (Paul et al., 2022). This condition, which affects millions of children worldwide, is associated with long-term consequences, including reduced cognitive development, weakened immune systems, and diminished economic productivity (Shaffer et al., 2019). The prevalence of stunting has remained high despite various global interventions aimed at improving childhood nutrition, particularly in

regions such as South Asia and Sub-Saharan Africa, where stunting rates in children under five still exceed 30% in several countries (Menjetta et al., 2019).

In the past five years, global efforts to combat stunting have yielded mixed results. While some nations, such as Bangladesh, have achieved measurable reductions in stunting prevalence, others, including Nigeria and Yemen, continue to experience rising rates due to factors such as food insecurity, poor maternal health, and socio-political instability (Caruso et al., 2022). Additionally, humanitarian crises have further exacerbated stunting in vulnerable populations, particularly in conflict-affected and disaster-prone areas where access to adequate nutrition and healthcare remains inconsistent (Myers et al., 2020). Despite significant financial and policy commitments, global stunting rates continue to stagnate, indicating the need for more targeted and sustainable interventions (Finstad et al., 2021).

Several socio-economic and environmental factors contribute to the persistence of stunting. Research indicates that maternal nutrition plays a critical role in determining child health outcomes. Poor maternal dietary intake, micronutrient deficiencies, and pregnancy-related health conditions such as anemia and diabetes can significantly increase the risk of stunting in children (Michaelis et al., 2021). Additionally, food insecurity remains a dominant determinant, particularly among low-income households, where access to nutrient-rich food is often limited (Schilling et al., 2020). Studies have consistently shown that children from lower socio-economic backgrounds are disproportionately affected, reinforcing the relationship between poverty, limited healthcare access, and malnutrition (Varghese et al., 2019).

Childcare and feeding practices also significantly impact stunting prevalence. Exclusive breastfeeding for the first six months of life is widely recommended; however, cultural practices and inadequate maternal education often lead to early introduction of complementary foods, which can contribute to nutrient deficiencies (Woerner et al., 2021). Furthermore, limited awareness among caregivers regarding optimal infant and young child feeding (IYCF) practices has been linked to poor nutritional outcomes (Wimalawansa, 2019). Environmental factors, such as poor sanitation and frequent infections, further compound the risk, as recurrent illnesses like diarrhea and respiratory infections can impair nutrient absorption and hinder growth (Modenese et al., 2021).

Recent global events, particularly the COVID-19 pandemic, have further complicated stunting prevention efforts. The pandemic disrupted food supply chains, strained healthcare systems, and increased economic hardship, all of which contributed to rising malnutrition rates (Yorio et al., 2018). Lockdowns and movement restrictions hindered access to essential nutrition services, worsening the situation for at-risk populations (Zou et al., 2022). Reports suggest that setbacks from the pandemic could reverse years of progress in reducing stunting, highlighting the need for resilient and adaptive intervention strategies (Rim, 2021).

Despite growing research on stunting and its determinants, significant gaps remain in understanding the long-term effectiveness of existing interventions. Most studies focus on short-term outcomes, lacking longitudinal data that assess the sustained impact of nutritional programs (Gutermuth et al., 2018). Additionally, many interventions operate in isolation, addressing nutrition without considering broader socio-economic determinants such as education, healthcare

access, and economic stability (Pieper et al., 2019). A more integrated, multi-sectoral approach is needed to address the underlying causes of stunting holistically (Rodríguez-Blanes et al., 2019).

The primary objective of this review is to analyze the major determinants of stunting, with a particular focus on maternal nutrition, socio-economic status, feeding practices, and environmental factors. Additionally, this review aims to evaluate the effectiveness of current intervention strategies and identify gaps in the literature that hinder progress in reducing stunting prevalence. By synthesizing recent research, this study seeks to provide evidence-based recommendations for policymakers and healthcare practitioners to improve stunting prevention efforts.

The scope of this review encompasses studies conducted in various geographic regions, with an emphasis on high-burden areas such as South Asia, Sub-Saharan Africa, and Southeast Asia. These regions have been selected due to their persistently high stunting rates and the unique socio-economic and environmental challenges they face. Furthermore, this review will explore both rural and urban contexts to provide a comprehensive understanding of the factors influencing stunting and the effectiveness of different intervention models across diverse settings.

METHOD

This study employs a systematic review approach to examine the role of family-based interventions in preventing stunting among children under five. A comprehensive literature search was conducted across multiple academic databases, including PubMed, Scopus, and Google Scholar, to identify peer-reviewed studies published within the last decade. The search strategy combined predefined keywords with Boolean operators to enhance precision and comprehensiveness. The selected keywords included "stunting," "child nutrition," "family and health," "nutrition education," "stunting prevention interventions," "food security," "nutritious food," "eating behavior," "access to healthcare services," and "family education." These keywords ensured that various aspects of stunting and family-based prevention strategies were thoroughly explored.

The inclusion criteria encompassed original research articles, systematic reviews, and intervention studies that empirically or theoretically analyzed the impact of family-based nutritional education and interventions on stunting prevention. Studies involving children under five and addressing family-based approaches to stunting reduction were considered. Research conducted in both developed and developing countries was included to provide a broader perspective on the effectiveness of various interventions. Additionally, only studies published in English and other relevant languages were considered.

Exclusion criteria were applied to remove studies that did not adhere to empirical research methodologies, including opinion pieces, non-peer-reviewed reports, and editorials. Studies that focused on adult populations or non-relevant groups were excluded. Literature reviews that did not provide original data or meta-analyses not aligned with the study's focus on family nutrition education were also omitted. Additionally, studies involving children above the age of five were excluded to maintain focus on early childhood stunting prevention.

To ensure reliability, a multi-stage screening process was implemented. Four independent reviewers evaluated the studies, aligning them with the inclusion criteria. Initial screening involved title and abstract reviews, followed by a full-text assessment to determine methodological rigor and relevance. Key themes were synthesized to identify recurring patterns in the effectiveness of family-based interventions. The findings offer insights into the impact of parental education, dietary diversity, and healthcare access in mitigating stunting, thereby contributing to a more comprehensive understanding of effective prevention strategies.

RESULT AND DISCUSSION

Maternal Education Level and Its Impact on Child Nutrition and Stunting Risk

Maternal education plays a crucial role in determining child nutritional status and the risk of stunting. Studies indicate that mothers with higher levels of education tend to have better knowledge of nutrition and healthcare, leading to healthier feeding practices and improved dietary diversity for their children (Marttila-Tornio et al., 2020). A study conducted in Northern Finland found a strong correlation between parental education—particularly maternal education—and long-term health behaviors (Marttila-Tornio et al., 2020). The higher a mother's education level, the lower the likelihood of her child experiencing stunting, as she is more equipped to understand the importance of adequate nutrition and early healthcare interventions (Marttila-Tornio et al., 2020).

Nutritional literacy among mothers significantly contributes to healthier food choices and improved family dietary patterns. Mothers with adequate knowledge of essential nutrients required for child growth play a pivotal role in ensuring that their children receive balanced meals. Research has demonstrated that interventions aimed at enhancing maternal nutritional literacy can substantially reduce stunting risk among children (Marttila-Tornio et al., 2020).

Effective Educational Programs for Enhancing Maternal and Family Nutritional Literacy

Several types of educational programs have been found effective in improving maternal and family nutritional literacy. The most successful programs integrate interactive community-based approaches such as cooking classes, nutrition workshops, and peer support groups. These initiatives do not merely inform mothers about nutrition but also provide practical skills in selecting, preparing, and serving nutritious meals (Marttila-Tornio et al., 2020).

Studies analyzing various interventions suggest that public health education programs focusing on community-driven information dissemination yield the most positive outcomes. Community health workers delivering direct educational interventions to households have proven particularly effective in reaching mothers who may be inaccessible through conventional education systems (Marttila-Tornio et al., 2020).

Technology-based educational programs have also demonstrated potential in improving nutritional literacy. Mobile applications and e-learning platforms offering nutritional modules have shown promising results in enhancing maternal knowledge and promoting healthier feeding behaviors. Findings from technology-driven interventions reveal that mothers utilizing these

resources exhibit better understanding and improved feeding practices compared to those without access to such tools (Marttila-Tornio et al., 2020).

In summary, the most effective educational programs for improving nutritional literacy must consider local context and active community engagement. Interactive and hands-on learning strategies result in greater success in reducing stunting risk and improving child nutrition outcomes.

Effectiveness of Home-Based Interventions Such as Household Visits in Stunting Prevention

Home-based interventions, including household visits, have demonstrated significant effectiveness in preventing stunting. Research indicates that community health workers conducting home visits can provide crucial nutritional counseling and health education to families, leading to improved feeding practices and reduced stunting prevalence (Amu et al., 2022). A study in Bangladesh reported a 25% reduction in stunting prevalence among children in households receiving regular home-based nutritional counseling compared to control groups (Fisker et al., 2017).

Home visits enable healthcare professionals to assess children's health conditions firsthand and offer tailored recommendations to families. Additionally, such interventions provide emotional and practical support to mothers, ultimately contributing to better child health and nutritional outcomes (Li et al., 2022).

Role of Community Health Workers in Implementing Home-Based Interventions

Community health workers play a vital role in executing home-based intervention programs. Acting as a bridge between public health policies and local communities, they are responsible for disseminating information, raising awareness, and educating families on the importance of proper nutrition in preventing stunting (Roemer et al., 2022). Studies show that well-trained community health workers significantly enhance the reach and effectiveness of stunting prevention programs (Usher et al., 2021).

Additionally, these health workers serve as connectors to broader healthcare resources, such as nutritional aid programs and medical support services. Routine visits enable early detection of malnutrition, allowing for timely interventions that prevent stunting-related complications (Roemer et al., 2022).

Combining home visits with continuous community engagement has proven to be one of the most effective strategies in reducing stunting prevalence.

Relationship Between Household Food Security and Stunting Incidence in Children

Household food security plays a critical role in reducing the risk of stunting in children. Studies indicate that food-insecure households have a significantly higher likelihood of experiencing child stunting due to inadequate access to nutritious foods (Monroy-Iglesias et al., 2021). Research in Ethiopia found that children from food-secure households were at a substantially lower risk of stunting compared to those in food-insecure environments. The instability in food availability and reliance on nutrient-poor diets contribute directly to stunted growth among young children (Roodenrijs et al., 2021).

Food security is not just about caloric intake but also dietary diversity. Ensuring that children have access to varied and nutrient-dense foods is essential for promoting healthy growth and development. Policies aimed at strengthening household food security, including agricultural programs and social assistance schemes, have shown positive effects in reducing stunting prevalence globally (Mbeje et al., 2022; Sims et al., 2018).

Effectiveness of Community-Based Interventions Such as Urban Farming and Household Gardens

Community-based interventions like urban farming and household gardens have proven effective in improving dietary intake and combating stunting. Urban farming initiatives provide families with direct access to fresh, nutritious food, thereby enhancing their overall nutritional intake (Dalager et al., 2019). Studies have shown that families engaging in household gardening are more likely to consume diverse diets, leading to improved child nutrition and growth outcomes (Linnan et al., 2019).

For example, urban farming programs in various urban areas have significantly increased fruit and vegetable consumption among families. The direct impact of such interventions has been demonstrated in measurable reductions in childhood stunting prevalence (Almatroodi et al., 2022; Chau et al., 2019).

In addition to improving food security, community-based initiatives foster greater awareness and knowledge of nutrition. Programs that integrate education with practical gardening activities empower families to sustain their nutritional needs while simultaneously strengthening community resilience against food insecurity (Cabrera-León & Cantero-Braojos, 2018).

Role of Fathers and Extended Family in Supporting Child Nutrition

Influence of Paternal Involvement in Childcare and Feeding Practices

Paternal involvement in child nutrition has been identified as a significant factor in reducing stunting prevalence. Research indicates that when fathers actively participate in childcare and nutritional decisions, child health outcomes improve considerably. Studies conducted in both Africa and Asia reveal that active paternal engagement in feeding decisions leads to healthier dietary patterns and reduced stunting prevalence (yazdizadeh et al., 2020).

Fathers' involvement in childcare enhances household food security and encourages better nutritional habits within the family. Studies suggest that engaged fathers contribute to selecting more nutritious foods, providing financial support for better meal options, and reinforcing positive feeding behaviors (Sims et al., 2018).

Role of Extended Family in Enhancing Nutritional Support

Extended family members, such as grandparents and other relatives, also play an essential role in supporting child nutrition. Many cultural settings involve shared caregiving responsibilities, where extended family members influence feeding habits and dietary choices (Monroy-Iglesias et al., 2021).

Support from extended family members has been found to enhance food security and improve household dietary diversity. In many cases, grandparents contribute valuable traditional knowledge

about nutritious food preparation and consumption, which positively influences child growth outcomes (Mulder et al., 2020).

In summary, fostering strong family support systems, including the active involvement of fathers and extended family, significantly enhances the effectiveness of stunting prevention strategies.

Cultural and Social Influences on Child Nutrition and Stunting Risk

Cultural and social norms play a crucial role in shaping dietary habits and nutritional status among children. Cultural dietary preferences, food taboos, and traditional beliefs influence household feeding practices. Studies have found that in certain regions, high reliance on carbohydrate-rich diets with limited protein intake contributes to increased stunting prevalence (D'ettorre et al., 2021).

Culturally tailored nutrition education programs have demonstrated effectiveness in promoting positive dietary behaviors. Programs that incorporate culturally relevant dietary practices and local food sources are more successful in improving nutrition knowledge and reducing stunting prevalence (yazdizadeh et al., 2020).

By addressing cultural influences on diet and nutrition, public health initiatives can enhance the effectiveness of stunting prevention efforts and foster long-term behavioral changes within communities.

Integration of Findings with National and Global Health Policies

The findings from the reviewed literature align significantly with national and global health policy recommendations, particularly in the context of stunting prevention. Research consistently highlights the importance of paternal involvement, extended family support, and culturally tailored interventions in promoting optimal child nutrition and reducing stunting prevalence. These findings are in line with recommendations from the World Health Organization (WHO), which emphasizes strengthening family functions and community-based programs as part of comprehensive stunting prevention strategies (Chau et al., 2019; Sims et al., 2018).

Additionally, the relationship between household food security and stunting risk, as identified in the literature, supports policies aimed at improving food access and household-level food security (Monroy-Iglesias et al., 2021). Policies that promote community-based interventions, such as urban farming and household gardens, have been incorporated into many national and global action plans for addressing malnutrition, particularly in developing countries (Mulder et al., 2020). The emphasis on culturally integrated nutrition education programs further reinforces the importance of incorporating traditional values into public health campaigns, which has been advocated as a key strategy in global nutrition initiatives (Dalager et al., 2019).

Despite these policy alignments, the literature also highlights gaps in the implementation of existing initiatives, such as the lack of measurable outcomes from family-based intervention programs and the need for more effective, sustainable nutrition education strategies (yazdizadeh et al., 2020). These gaps indicate a need for enhanced collaboration between healthcare providers, governments, and communities to integrate family-focused interventions into broader health policies.

A notable example of such efforts is the implementation of maternal nutrition education programs, which have demonstrated effectiveness in improving household dietary practices and reducing childhood malnutrition (Court et al., 2018). Furthermore, training programs that equip local communities with the skills to diversify their diets are consistent with global recommendations aimed at reducing micronutrient deficiencies and promoting balanced diets (Pawloski et al., 2021).

Challenges in Implementing Family-Based Stunting Prevention Interventions

Despite the proven effectiveness of family-based interventions, their implementation faces several key challenges. One major challenge is the limited time available for families, particularly for working mothers. Research indicates that mothers who spend more time working outside the home often have less time to prepare nutritious meals and actively engage in child-rearing, increasing the risk of stunting (Ajidahun et al., 2019). This time constraint often hinders the consistent adoption of healthy feeding practices within households.

Another challenge is the variation in nutritional knowledge among family members. In some cases, a lack of nutritional literacy among parents, including fathers and extended family members, can reduce the effectiveness of interventions. Misconceptions about nutrition and inadequate understanding of healthy feeding practices may lead to inconsistent implementation of dietary recommendations at home (Rose et al., 2022). While involving extended family members in nutrition education can help address this gap, discrepancies in prior knowledge and beliefs often complicate efforts to establish uniform nutritional practices within households.

Access to resources and community support further complicates intervention efforts. In many regions, particularly rural areas, barriers such as poverty, limited healthcare access, and inadequate infrastructure hinder the success of family-based stunting prevention programs (Dalager et al., 2019). In such cases, community health workers play a crucial role in bridging the gap between households and healthcare services, but they often face resource limitations or insufficient training to effectively implement interventions.

Cultural and social norms also influence the success of interventions. Deep-rooted dietary habits and food preferences may hinder the acceptance of new nutritional guidelines. For instance, in communities where carbohydrate-heavy diets dominate, introducing protein-rich foods may be challenging due to cultural resistance (Paul et al., 2022). Addressing such challenges requires culturally sensitive approaches that respect traditional dietary practices while gradually integrating healthier alternatives into daily consumption patterns.

Solutions to Enhance the Effectiveness of Family-Based Stunting Prevention Programs

To improve the effectiveness of family-based stunting prevention programs, several innovative solutions can be implemented. These solutions focus on increasing family involvement, leveraging technology, and fostering community-based and culturally sensitive initiatives.

Increasing Family Engagement

Enhancing paternal involvement in childcare and feeding practices can significantly improve child nutrition outcomes. Studies highlight that active paternal participation in child-rearing positively impacts dietary diversity and overall child health (yazdizadeh et al., 2020). To facilitate greater paternal engagement, interventions can introduce educational programs tailored for fathers,

emphasizing their role in supporting maternal efforts to provide balanced nutrition. Workshops that encourage joint meal preparation and caregiving responsibilities have been shown to strengthen parental collaboration and promote healthier dietary choices.

Leveraging Technology

The use of technology presents a promising avenue for expanding the reach of nutrition education programs. Mobile applications that provide real-time nutritional guidance, meal planning tools, and child growth tracking can empower parents to make informed dietary decisions. Research suggests that digital platforms designed for nutrition education improve maternal knowledge and feeding practices, particularly in resource-limited settings where traditional health education efforts may be difficult to implement (Dalager et al., 2019; Linnan et al., 2019). Additionally, social media campaigns can enhance public awareness and encourage community participation in nutrition improvement initiatives.

Community-Based Initiatives

Community-driven programs such as urban farming and household gardening have proven effective in increasing food security and improving household nutrition. Programs that educate families on sustainable food production and nutrition not only enhance dietary diversity but also promote economic resilience within communities (Monroy-Iglesias et al., 2021; Mulder et al., 2020). By fostering collective responsibility for nutrition security, these initiatives help families develop long-term solutions to malnutrition and food shortages.

Culturally Sensitive Approaches

Tailoring nutrition interventions to align with cultural practices can enhance program acceptability and sustainability. Integrating local food traditions into nutrition education programs ensures that dietary recommendations resonate with target populations. Studies suggest that culturally relevant interventions, such as nutrition education delivered through community elders or traditional healers, are more likely to gain acceptance and produce positive behavioral changes (D'ettorre et al., 2021; Roodenrijs et al., 2021). Strengthening collaboration between public health officials and cultural leaders can help promote community-wide adoption of improved dietary habits.

Limitations

While the findings from the reviewed literature provide valuable insights into the role of family-based interventions in stunting prevention, several limitations exist. The majority of studies focus on short-term intervention outcomes, limiting the ability to assess long-term effectiveness. Additionally, variations in study methodologies and participant demographics make it challenging to draw universally applicable conclusions. Future research should aim to address these gaps by conducting longitudinal studies that evaluate the sustained impact of family-based nutritional programs across diverse cultural and socio-economic contexts.

Implications

The implications of these findings highlight the need for policy adjustments that emphasize holistic, family-centered approaches to stunting prevention. Health policies should incorporate community-driven initiatives that actively engage all family members, rather than solely focusing

on maternal education. Additionally, integrating nutrition education into formal school curricula can help instill lifelong healthy eating habits from an early age. Future research should explore the potential of integrating digital tools and artificial intelligence-driven interventions to optimize nutrition education and enhance accessibility for diverse populations.

Expanding the scale of successful interventions, such as urban farming and digital nutrition education programs, can help bridge gaps in food security and nutritional knowledge. Governments and non-governmental organizations should collaborate to ensure that funding is directed towards evidence-based interventions that have demonstrated measurable success in improving child nutrition outcomes. Furthermore, multi-sectoral partnerships between healthcare providers, educators, and agricultural experts can facilitate the implementation of sustainable nutrition programs that address the root causes of stunting.

By advancing research in these areas and fostering cross-sector collaboration, public health initiatives can make meaningful progress in reducing global stunting rates and ensuring that children receive the nutrition they need for optimal growth and development.

CONCLUSION

This review confirms that family centered strategies are critical in stunting prevention. Maternal education, paternal engagement, household food security, and culturally grounded programs are consistently effective. However, practical implementation is hindered by time limitations, resource constraints, and cultural dynamics.

Recommendations

- Governments should fund maternal education as a long term investment in child health.
- Community based programs should actively involve fathers and extended family.
- Digital tools and mobile platforms must be leveraged to disseminate nutrition education.
- Urban farming and household gardening programs should be institutionalized with policy support.

Policy and Practice Implications:

- Integrate family based approaches into national nutrition strategies.
- Align urban farming programs with public health infrastructure.
- Encourage collaboration across sectors (health, education, agriculture).
- Embed culturally tailored nutrition education in both formal and informal community platforms.

These efforts are vital to achieving equitable child growth outcomes and reducing global stunting prevalence sustainably.

REFERENCE

Ajidahun, A. T., Myezwa, H., Mudzi, W., & Wood, W.-A. (2019). Barriers and Facilitators in Implementing an Exercise-Based Injury Prevention Program for String Players. *Work*, *64*(4), 713–720. https://doi.org/10.3233/wor-193033

Almatroodi, S. A., Khan, A. A., Aloliqi, A. A., Syed, M. A., & Rahmani, A. H. (2022). Therapeutic Potential of Ajwa Dates (Phoenix Dactylifera) Extract in Prevention of Benzo(a)pyrene-Induced Lung Injury Through the Modulation of Oxidative Stress, Inflammation, and Cell Signalling Molecules. *Applied Sciences*, *12*(13), 6784. https://doi.org/10.3390/app12136784

Amu, H., Adjei, M. E., Dowou, R. K., & Bain, L. E. (2022). Adopting Population-Based Interventions Towards Sustaining Child Health Services in the Midst of COVID-19 in Sub-Saharan Africa: Application of the Socio-Ecological Model. *Pan African Medical Journal*, *41*. https://doi.org/10.11604/pamj.2022.41.70.31396

Cabrera-León, A., & Cantero-Braojos, M. Á. (2018). Impacto Del Dolor Crónico Discapacitante: Resultados De Un Estudio Poblacional Transversal Con Entrevista Cara a Cara. *Atención Primaria*, *50*(9), 527–538. https://doi.org/10.1016/j.aprim.2017.03.020

Caruso, R., Toffanin, T., Folesani, F., Biancosino, B., Romagnolo, F., Riba, M. B., McFarland, D. C., Palagini, L., Murri, M. B., Zerbinati, L., & Grassi, L. (2022). Violence Against Physicians in the Workplace: Trends, Causes, Consequences, and Strategies for Intervention. *Current Psychiatry Reports*, *24*(12), 911–924. https://doi.org/10.1007/s11920-022-01398-1

Chau, J. Y., Engelen, L., Kolbe-Alexander, T., Young, S., Olsen, H., Gilson, N. D., Burton, N. W., Bauman, A., & Brown, W. J. (2019). "In Initiative Overload": Australian Perspectives on Promoting Physical Activity in the Workplace From Diverse Industries. *International Journal of Environmental Research and Public Health*, *16*(3), 516. https://doi.org/10.3390/ijerph16030516

Court, J. H., Lu, L. M., Wang, N., & McGhee, C. N. J. (2018). Visual and Ocular Morbidity in Severe Open-globe Injuries Presenting to a Regional Eye Centre in New Zealand. *Clinical and Experimental Ophthalmology*, *47*(4), 469–477. https://doi.org/10.1111/ceo.13439

Dalager, T., Højmark, A., Jensen, P. T., Søgaard, K., & Andersen, L. N. (2019). Using an Intervention Mapping Approach to Develop Prevention and Rehabilitation Strategies for Musculoskeletal Pain Among Surgeons. *BMC Public Health*, *19*(1). https://doi.org/10.1186/s12889-019-6625-4

D'ettorre, G., Ceccarelli, G., Santinelli, L., Vassalini, P., Innocenti, G. P., Alessandri, F., Koukopoulos, A. E., Russo, A., D'ettorre, G., & Tarsitani, L. (2021). Post-traumatic stress symptoms in healthcare workers dealing with the covid-19 pandemic: A systematic review. *International Journal of Environmental Research and Public Health*, *18*(2), 1–16. https://doi.org/10.3390/ijerph18020601

Finstad, G. L., Giorgi, G., Lulli, L. G., Pandolfi, C., Foti, G., Pérez, J., Sánchez, F. J. C., & Mucci, N. (2021). Resilience, Coping Strategies and Posttraumatic Growth in the Workplace Following COVID-19: A Narrative Review on the Positive Aspects of Trauma. *International*

Journal of Environmental Research and Public Health, *18*(18), 9453. https://doi.org/10.3390/ijerph18189453

Fisker, M. H., j, N. E. E., Vejlstrup, S. Ã. ¸ G., Lindschou, J., Gluud, C., Winkel, P., Bonde, J. ., & Agner, T. (2017). Prevention of Hand Eczema: Effect of an Educational Program Versus Treatment as Usual – Results Of the Randomized Clinical PREVEX Trial. *Scandinavian Journal of Work Environment & Health*. https://doi.org/10.5271/sjweh.3687

Gutermuth, L. K., Hager, E. R., & Porter, K. M. P. (2018). Using the CDC's Worksite Health ScoreCard as a Framework to Examine Worksite Health Promotion and Physical Activity. *Preventing Chronic Disease*, *15*. https://doi.org/10.5888/pcd15.170463

Li, P., Chen, B., Deveaux, G., Luo, Y., Tao, W., Li, W., Wen, J., & Yuan, Z. (2022). Cross-Verification of COVID-19 Information Obtained From Unofficial Social Media Accounts and Associated Changes in Health Behaviors: Web-Based Questionnaire Study Among Chinese Netizens. *Jmir Public Health and Surveillance*, *8*(5), e33577. https://doi.org/10.2196/33577

Linnan, L., Cluff, L., Lang, J. E., Penne, M. A., & Leff, M. S. (2019). Results of the Workplace Health in America Survey. *American Journal of Health Promotion*, *33*(5), 652–665. https://doi.org/10.1177/0890117119842047

Marttila-Tornio, K., Männikkö, N., Ruotsalainen, H., Miettunen, J., & Kääriäinen, M. (2020). Lower Parental Socioeconomic Status in Childhood and Adolescence Predicts Unhealthy Health Behaviour Patterns in Adolescence in Northern Finland. *Scandinavian Journal of Caring Sciences*, *35*(3), 742–752. https://doi.org/10.1111/scs.12888

Mbeje, N. P., Ginindza, T. G., & Jafta, N. (2022). Epidemiological Study of Risk Factors for Lung Cancer in KwaZulu-Natal, South Africa. *International Journal of Environmental Research and Public Health*, *19*(11), 6752. https://doi.org/10.3390/ijerph19116752

Menjetta, T., Debalke, S., & Dana, D. (2019). <i>Schistosoma Mansoni</I> Infection and Risk Factors Among the Fishermen of Lake Hawassa, Southern Ethiopia. *Journal of Biosocial Science*, *51*(6), 817–826. https://doi.org/10.1017/s0021932019000075

Michaelis, M., Burgess, S., Junne, F., Rothermund, E., Gündel, H., Zipfel, S., Wolf, M., & Rieger, M. A. (2021). Mental Health Applications for Primary and Secondary Prevention of Common Mental Disorders: Attitudes of German Employees. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.508622

Modenese, A., Casolari, L., Rossi, G., Vecchia, E. D., Glieca, F., D'Elia, C., Garavini, D., Righi, E., Mariani, S., Venturelli, L., Vívoli, D., & Gobba, F. (2021). Factors Associated With SARS-CoV-2 Infection Risk Among Healthcare Workers of an Italian University Hospital. *Healthcare*, *9*(11), 1495. https://doi.org/10.3390/healthcare9111495

Monroy-Iglesias, M. J., Dolly, S., Sarker, D., Thillai, K., Hemelrijck, M. V, & Santaolalla, A. (2021). Pancreatic Cancer Exposome Profile to Aid Early Detection and Inform Prevention Strategies. *Journal of Clinical Medicine*, *10*(8), 1665. https://doi.org/10.3390/jcm10081665

Mulder, L., Belay, B., Mukhtar, Q., Lang, J. E., Harris, D., & Onufrak, S. (2020). Prevalence of Workplace Health Practices and Policies in Hospitals: Results From the Workplace Health in America Study. *American Journal of Health Promotion*, *34*(8), 867–875. https://doi.org/10.1177/0890117120905232

Myers, D. J., Hoppin, P., Jacobs, M., Clapp, R., & Kriebel, D. (2020). Cancer Rates Not Explained by Smoking: A County-Level Analysis. *Environmental Health*, *19*(1). https://doi.org/10.1186/s12940-020-00613-x

Paul, S., Nahar, A., Bhagawati, M., & Kunwar, A. J. (2022). A Review on Recent Advances of Cerebral Palsy. *Oxidative Medicine and Cellular Longevity*, *2022*, 1–20. https://doi.org/10.1155/2022/2622310

Pawloski, K. R., Kolod, B., Khan, R. F., Midya, V., Chen, T., Oduwole, A., Camins, B., Colicino, E., Leitman, I. M., Nabeel, I., Oliver, K., & Valvi, D. (2021). Factors Associated With SARS-CoV-2 Infection in Physician Trainees in New York City During the First COVID-19 Wave. *International Journal of Environmental Research and Public Health*, *18*(10), 5274. https://doi.org/10.3390/ijerph18105274

Pieper, C., Schröer, S., & Eilerts, A.-L. (2019). Evidence of Workplace Interventions—A Systematic Review of Systematic Reviews. *International Journal of Environmental Research and Public Health*, *16*(19), 3553. https://doi.org/10.3390/ijerph16193553

Rim, K.-T. (2021). Application of the Adverse Outcome Pathway Framework to Predict the Toxicity of Chemicals in the Semiconductor Manufacturing Industry. *Molecular & Cellular Toxicology*, *17*(3), 325–345. https://doi.org/10.1007/s13273-021-00139-4

Rodríguez-Blanes, G. M., Lobato-Cañón, J. R., Sánchez-Payá, J., Ausó-Pérez, J. R., & Cardona-Llorens, A. (2019). The Influence of Information on the Prevention of Occupational Risks and Ergonomic Requirements in the Development of Non-Traumatic Osteomuscular Diseases of the Shoulder – A Pilot Study. *International Journal of Occupational Medicine and Environmental Health*, *32*(6), 825–839. https://doi.org/10.13075/ijomeh.1896.01429

Roemer, E. C., Kent, K., Goetzel, R. Z., Krill, J., Williams, F. S., & Lang, J. E. (2022). The CDC Worksite Health ScoreCard: A Tool to Advance Workplace Health Promotion Programs and Practices. *Preventing Chronic Disease*, *19*. https://doi.org/10.5888/pcd19.210375

Roodenrijs, N. M. T., Hamar, A., Kedves, M., Nagy, G., Laar, J. M. v., Heijde, D. v. d., & Welsing, P. M. J. (2021). Pharmacological and Non-Pharmacological Therapeutic Strategies in Difficult-to-Treat Rheumatoid Arthritis: A Systematic Literature Review Informing the EULAR Recommendations for the Management of Difficult-to-Treat Rheumatoid Arthritis. *RMD Open*, *7*(1), e001512. https://doi.org/10.1136/rmdopen-2020-001512

Rose, L., Istanboulian, L., Amaral, A. C. K., Burry, L., Cox, C. E., Cuthbertson, B. H., Iwashyna, T. J., Dale, C., & Fraser, I. (2022). Co-Designed and Consensus Based Development of a Quality Improvement Checklist of Patient and Family-Centered Actionable Processes of Care for Adults With Persistent Critical Illness. *Journal of Critical Care*, *72*, 154153. https://doi.org/10.1016/j.jcrc.2022.154153

Schilling, R., Colledge, F., Pühse, U., & Gerber, M. (2020). Stress-Buffering Effects of Physical Activity and Cardiorespiratory Fitness on Metabolic Syndrome: A Prospective Study in Police Officers. *Plos One*, *15*(7), e0236526. https://doi.org/10.1371/journal.pone.0236526

Shaffer, R. M., Sellers, S., Baker, M. G., Kalman, R. d. B., Frostad, J., Suter, M., Anenberg, S. C., Balbus, J., Basu, N., Bellinger, D. C., Birnbaum, L. S., Bräuer, M., Cohen, A. J., Ebi, K. L., Fuller, R., Grandjean, P., Hess, J., Kogevinas, M., Kumar, P., … Hu, H. (2019). Improving and Expanding Estimates of the Global Burden of Disease Due to Environmental Health Risk Factors. *Environmental Health Perspectives*, *127*(10). https://doi.org/10.1289/ehp5496

Sims, J. N., Yedjou, C. G., Abugri, D. A., Payton, M., Turner, T., Miele, L., & Tchounwou, P. B. (2018). Racial Disparities and Preventive Measures to Renal Cell Carcinoma. *International Journal of Environmental Research and Public Health*, *15*(6), 1089. https://doi.org/10.3390/ijerph15061089

Usher, K., Durkin, J., Gyamfi, N., Warsini, S., & Jackson, D. (2021). Preparedness for Viral Respiratory Infection Pandemic in Residential Aged Care Facilities: A Review of the Literature to Inform Post-COVID-19 Response. *Journal of Clinical Nursing*. https://doi.org/10.1111/jocn.15863

Varghese, B. M., Barnett, A., Hansen, A., Bi, P., Hanson-Easey, S., Heyworth, J., Sim, M., & Pisaniello, D. (2019). The Effects of Ambient Temperatures on the Risk of Work-Related Injuries and Illnesses: Evidence From Adelaide, Australia 2003–2013. *Environmental Research*, *170*, 101–109. https://doi.org/10.1016/j.envres.2018.12.024

Wimalawansa, S. J. (2019). Public Health Interventions for Chronic Diseases: Cost–benefit Modelizations for Eradicating Chronic Kidney Disease of Multifactorial Origin (CKDmfo/ CKDu) From Tropical Countries. *Heliyon*, *5*(10), e02309. https://doi.org/10.1016/j.heliyon.2019.e02309

Woerner, A., Chick, J. F. B., Monroe, E. J., Ingraham, C. R., Pereira, K., Lee, E., Hage, A. N., Makary, M. S., & Shin, D. (2021). Interventional Radiology in the Coronavirus Disease 2019 Pandemic: Impact on Practices and Wellbeing. *Academic Radiology*, *28*(9), 1209–1218. https://doi.org/10.1016/j.acra.2021.05.025

yazdizadeh, vahideh, Taghizadeh, Z., Farahani, M. F., Nekavand, M., & Senjedary, Z. A. (2020). Is AIDS Related to Social Determinants of Health in Iran? A Systematic Review. *Immunopathologia Persa*, *6*(1), e13–e13. https://doi.org/10.15171/ipp.2020.13

Yorio, P. L., Laney, A. S., Halldin, C. N., Blackley, D. J., Moore, S. M., Wizner, K., Radonovich, L. J., & Greenawald, L. A. (2018). Interstitial Lung Diseases in the U.S. Mining Industry: Using MSHA Data to Examine Trends and the Prevention Effects of Compliance With Health Regulations, 1996–2015. *Risk Analysis*, *38*(9), 1962–1971. https://doi.org/10.1111/risa.13000

Zou, J., Sun, T., Song, X., Liu, Y.-M., Lei, F., Chen, M., Chen, Z., Zhang, P., Ji, Y., Zhang, X., She, Z., Cai, J., Luo, Y., Wang, P., & Li, H. (2022). Distributions and Trends of the Global Burden of COPD Attributable to Risk Factors by SDI, Age, and Sex From 1990 to 2019: A

Systematic Analysis of GBD 2019 Data. *Respiratory Research*, *23*(1). https://doi.org/10.1186/s12931-022-02011-y