

# Occupational Impact of Musculoskeletal or Mental Health Disorders on Health-Related Quality of Life among Public Safety Personnel: Systematic Review and Meta-Analysis

PRESENTED AT:



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## Introduction

- Public safety personnel (PSP) including firefighters, police officers, and paramedics are exposed to daily occupational hazards that risk physical, emotional, and mental health<sup>1-2</sup>
- It is important to understand the impact of musculoskeletal (MSK) or mental health disorders (MHD) on the Health-Related Quality of Life (HRQoL).

## Purpose

- To determine if there is a difference in HRQoL scores of PSP with or without MSK disorders or MHD.
- To compare the HRQoL scores of PSP and the general population using age-matched normative data of Short Form (SF-12, SF-36) and European Quality of Life Five-Dimension (EQ-5D) outcome measures.

## Methods

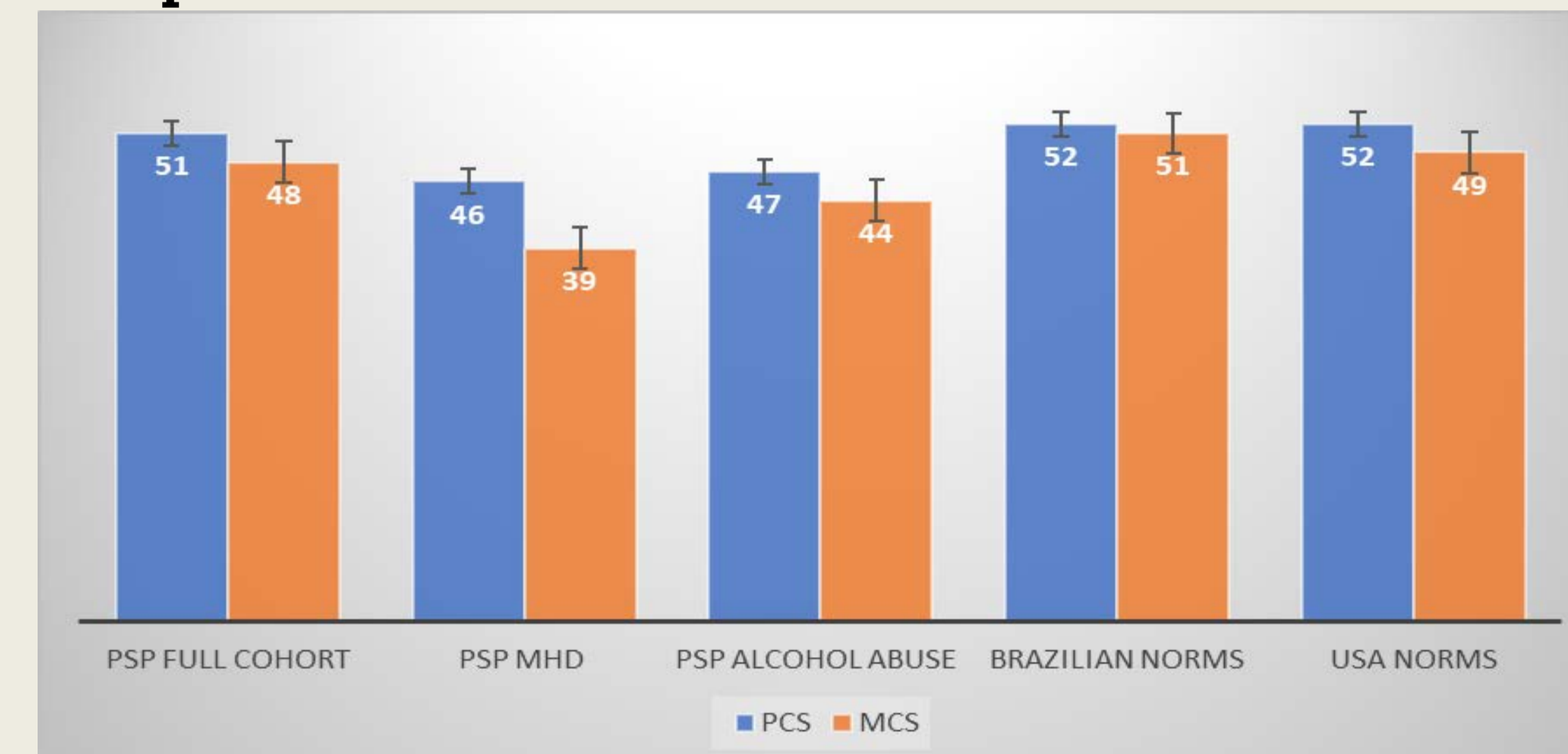
- This systematic review and meta-analysis was done in accordance with the PRISMA guidelines and registered in PROSPERO (CRD42022339323)
- Two reviewers independently screened the studies and conducted quality assessment, using **Down and Black** critical appraisal tool
- Short Form (SF-12, SF-36) Subscales, Physical and Mental Component Summary Scores (PCS/MCS) and EQ-5D scores were extracted.
- Random effect model using Dar Simonian and Laird was utilized to meta-analyze subgroup differences

## Results

- 12** studies were included for meta-analysis with a total of 10,099 participants.
- Age range between 31-51 years

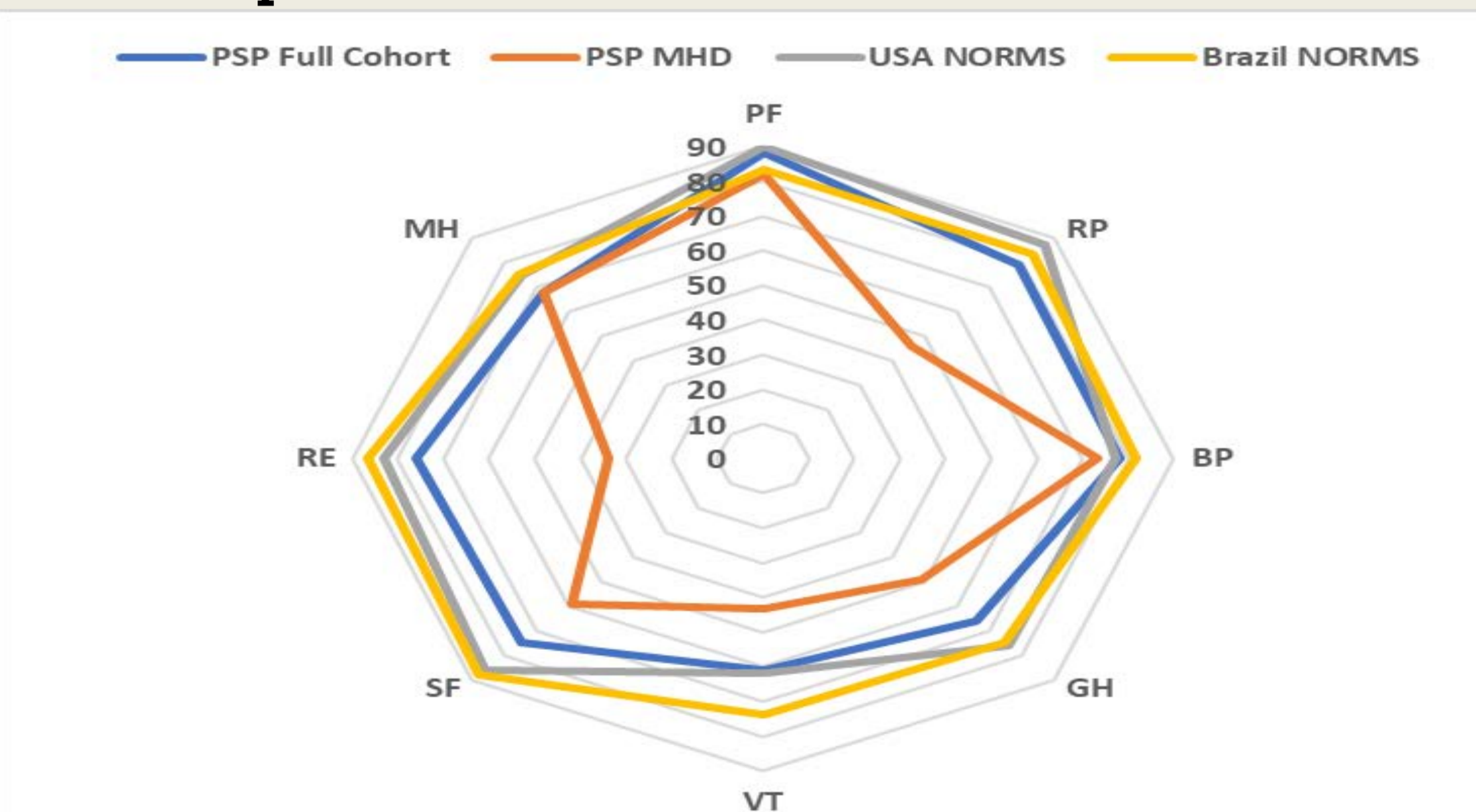
## Results

**Figure 1: Histogram comparing the SF-12 scores of PSP Groups with Brazilian and USA SF-12 Normative Scores.**



- PSP** with MHD had the lowest physical component summary scores, **PCS = 45 (44-47)** and mental component summary scores **MCS = 39 (34-43)** compared to other PSP groups.
- Brazilian, PCS, = 52 (52-53) and USA, PCS = 52 (51-52) age-matched normative datasets** reported normal physical health scores compared to the PSP groups. But the USA, had poor mental health scores **MCS = 49 (49-50)**

**Figure 3: Radar Chart comparing the SF-36 Subscales of PSP Groups with USA and Brazilian Normative Scores**



PF - Physical functioning; RP - Role limitations due to physical health problems, BP - bodily pain, GH- general health perception, VT- vitality, SF- social functioning, RE- role limitations due to emotional problems, and MH- general mental health

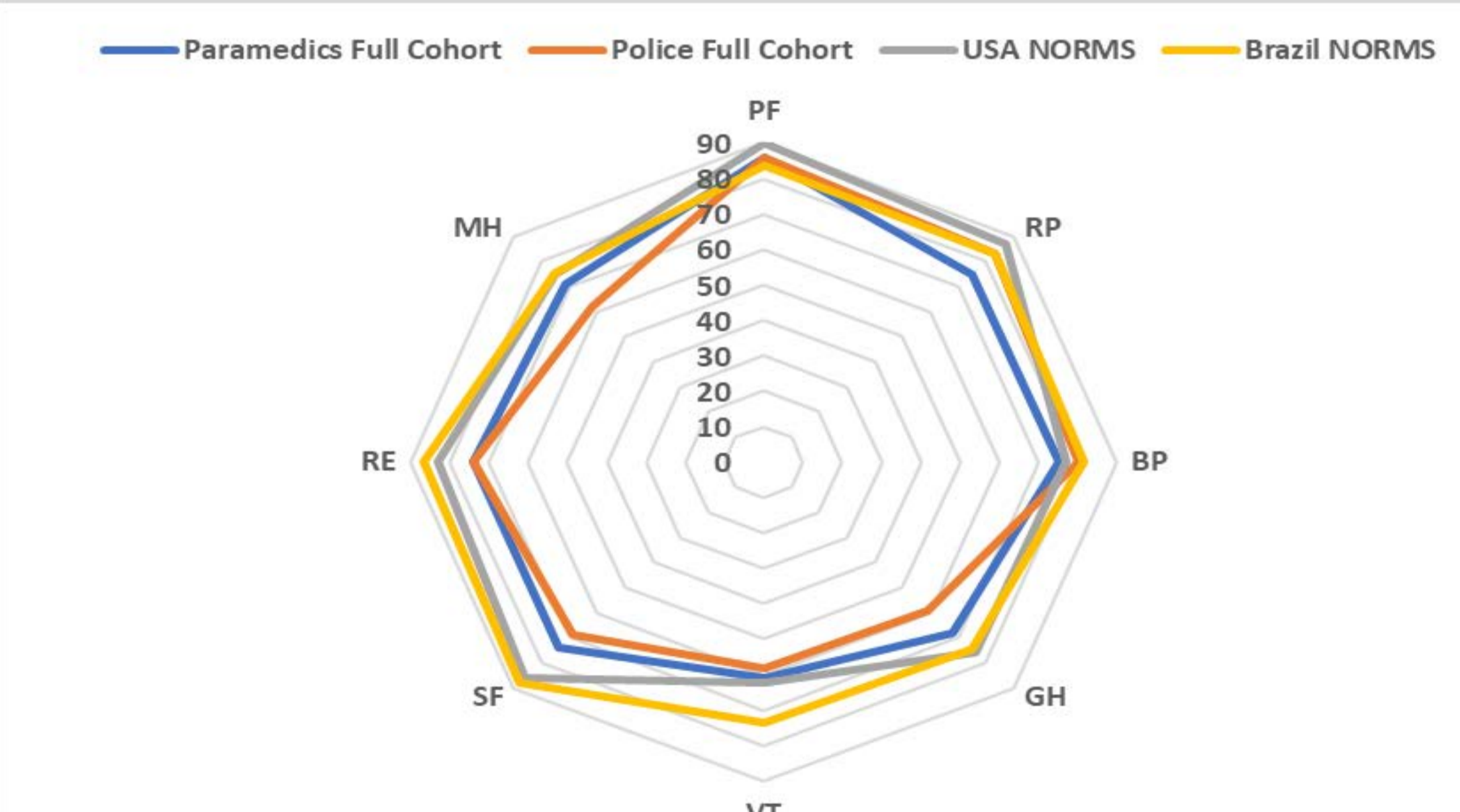
- Emotional health was most affected in PSP with MHD **RE = 33 (25 - 42)**.
- Physical health was least affected in PSP with MHD reported **PF= 82 (79 - 84)**.

**Figure 2: Histogram comparing the SF-12 scores of PSP Subgroups with USA and Brazilian population SF-12 Normative Scores.**



- Police officers** with MHD and alcohol abuse had the lowest physical and mental health **PCS = 46 (45 - 47)** and **MCS = 34 (24 - 43)** scores
- Physical health was “normal” for **Police officers PCS= 50 (48 - 51)** and **paramedics, PSC = 50 (49 - 51)** without health disorders.
- Firefighters** without health disorders reported the highest **PCS = 53 (49 - 56)** scores.

**Figure 4: Radar Chart comparing the SF-36 Subscales of PSP Subgroups with USA and Brazilian Normative Scores**



- PSP without health disorders reported normal physical health **PF = 87 (83 - 91)**.
- PSP without health disorders also reported normal vitality. **VT = 60(55-65)**



<https://www.istockphoto.com/illustrations/police-firefighter-paramedic>

## Discussion & Conclusion

- Despite the fact that entry into PSP service requires excellent health those that develop mental health disorders have lower than normal mental health scores, with a smaller impact on physical health.
- Effects were largest in police compared to other PSP, which may relate to the social impacts of variable public perceptions.

## Limitation

- Meta-analysis and conclusions about MSK health was limited since we found only 2 studies.

## References

- Carleton, Afifi, Turner, Taillieu, El-Gabalawy S& A. Chronic pain among public safety personnel in Canada. Canadian Journal of Pain 2017;1:237-46. <https://doi.org/10.1080/24740527.2017.1410431>.
- Carleton RN, Afifi TO, Turner S, Taillieu T, Duranceau S, LeBouthillier DM, et al. Mental Disorder Symptoms among Public Safety Personnel in Canada. Canadian Journal of Psychiatry 2018;63:54-64. <https://doi.org/10.1177/0706743717723825>.

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