

ANXIETY AND DEPRESSION AMONG OIL AND GAS INDUSTRY WORKERS ACROSS DIFFERENT COUNTRIES, A SHORT REVIEW

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Abstract

Introduction: Globally, the prevalence of depression and anxiety is escalating, presenting significant economic and public health challenges. **Objective:** This study aims to review investigations conducted on depression and anxiety among workers in the oil and gas industry across various countries, adhering to PRISMA guidelines, to identify in which countries these studies have been carried out. **Materials and methods:** The research was conducted across multiple databases, including PubMed, Scopus, Web of Science, and APA PsycINFO. The main inclusion criteria were all the workers from the oil and gas industry who were evaluated with qualitative assessments for depression and anxiety. **Results and discussion:** Initially, 3349 studies were identified, followed by the removal of duplicates and screening of abstracts and full texts, resulting in a final selection of 25 studies. Synthesizing data from diverse global sources, our findings describe a predominant representation from China, alongside contributions from Iran, the UK, and Indonesia. **Conclusions:** This study provides valuable insights into the research on anxiety and depression in the oil and gas industry. We found an increasing research interest in the last five years, but there is a lack of studies in some regions. **Application:** This article strives to delineate the locations where the research has been conducted and the population covered by these locales. It is intended to serve as a reference for occupational professionals, enabling them to identify which authors have conducted research in the country where they are working or from countries that may serve as a reference due to geographic proximity.

Keywords: Worker's health, Occupational Health, Psychosocial risk, Occupational risk, Mental health, Oil and Gas.

Introduction

Depression and anxiety stand as the prevailing mental health conditions globally, with statistics from the World Health Organization (WHO) indicating that approximately 280 million individuals experienced depression and 301 million grappled with anxiety in 2019 alone. Moreover, recent estimations suggest a notable uptick in the prevalence of these disorders in recent years (WHO, 2023b, 2023a). These disorders can lead to extended periods of work absence. A study conducted in the Netherlands found that individuals experiencing depression may incur average absenteeism of 200 days, with men averaging 179 days and women 213 days (Koopmans *et al.*, 2008). Furthermore, depression and anxiety significantly influence the global economy. The productivity loss directly associated with these conditions totals roughly \$1 trillion annually, with projections suggesting a rise to \$16 trillion by 2030 (Chodavadia *et al.*, 2023).

In a study conducted among male employees on drilling rigs and production platform installations in the North Sea, researchers observed levels of mental well-being comparable to those of the general population. Still, they noted elevated anxiety levels (Cooper & Sutherland, 1987). Notably, there has been a lack of prior systematic reviews investigating anxiety and depression among personnel in the oil and gas industry.

Given the critical significance of this issue, there is an immediate necessity for a systematic investigation into depression and anxiety among workers on a global scale. This study aims to fill this gap by identifying countries that are researching these mental health conditions within the oil and gas industry workforce. The objective is to offer a comprehensive perspective that transcends regional or continental boundaries.

2. Materials and Methods

2.1. Study design

A literature review encompassing cohort, case-control, and cross-sectional studies was conducted. Systematic reviews and other literature reviews were excluded from the analysis. The methodology adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Rethlefsen *et al.*, 2021).

2.2. Search strategies

The information search was conducted in English to access the broadest available data. Several libraries, repositories, and databases were utilized, including PubMed, Scopus, Web of Science, and APA PsycINFO. The first three databases are renowned for their comprehensive coverage of peer-reviewed literature across multiple fields. Additionally, due to the specific focus on mental health conditions and relevant keywords, APA PsycINFO was also consulted. The search terms employed were "Depression", "Anxiety", "Oil and Gas", and "Workers." The study selection process comprised three exclusion stages. Initially, information published between 2019 and the first trimester 2024 was sought, focusing on research articles from peer-reviewed journals and English papers to ensure scientific relevance. Duplicate records were eliminated. Subsequently, each article underwent analysis to exclude those not meeting the predefined inclusion criteria (Bustos *et al.*, 2019). Following this, the search continued by reviewing the references of initially retrieved papers and utilizing the snowballing technique until no further relevant data was found (Wohlin, 2014). In this stage, the initially specified timeframe was relaxed, allowing for the inclusion of articles from 2019 backward when meeting the inclusion criteria. Following this, a third exclusion phase was conducted to remove duplicate records. Finally, the full texts of the remaining articles were carefully reviewed.

2.3 Inclusion criteria

The primary inclusion criteria encompassed all workers within the oil and gas industry who underwent qualitative assessments for depression and anxiety.

2.4 Data Synthesis

An examination of all manuscripts that satisfied the inclusion criteria was undertaken. The complete texts of the selected studies were acquired to collect relevant data, utilizing a tailored table for organization (Bustos *et al.*, 2021). Upon completing this process, the data from the manuscripts were structured and integrated into tables.

3. Results

Following the guidelines outlined in the PRISMA Statement, 3,321 items were identified through the database searches. Subsequently, search engine filters were applied to restrict results based on criteria such as date, article type, source type, and language. The query and filters underwent multiple adjustments to extract the requisite information from each database.

After removing duplicate entries and evaluating abstracts and full manuscripts, 25 studies were included in the analysis. A summary of the selection process is depicted in Fig.1. All findings were tabulated in this study to delineate their specific outcomes and compare them across predetermined categories for synthesis.

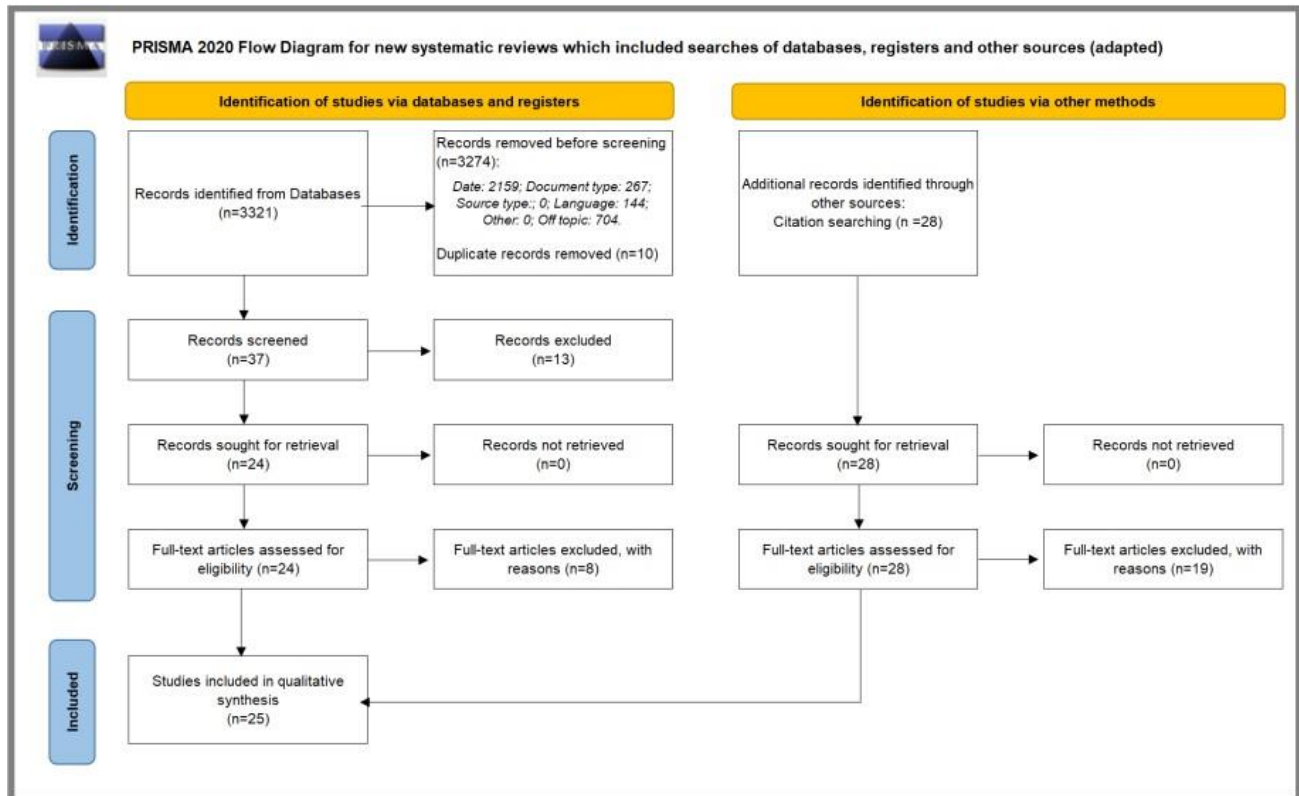


Figure 1. Summary of the research, based on the PRISMA Statement flow diagram

In Figure 2, it is illustrated that the first recorded study occurred in 1990, followed by another instance in 1992. Subsequently, there was a pause until 2015, when studies were again recorded. However, another interval until 2019 indicates a further hiatus in documentation. From 2019 onwards, studies have been consistently recorded, with a notable increase in frequency observed. The number of instances surged notably in 2020, reaching its peak, and remained relatively high in 2021 and 2022. However, the frequency dropped again in 2023, marking a decrease from the preceding years.

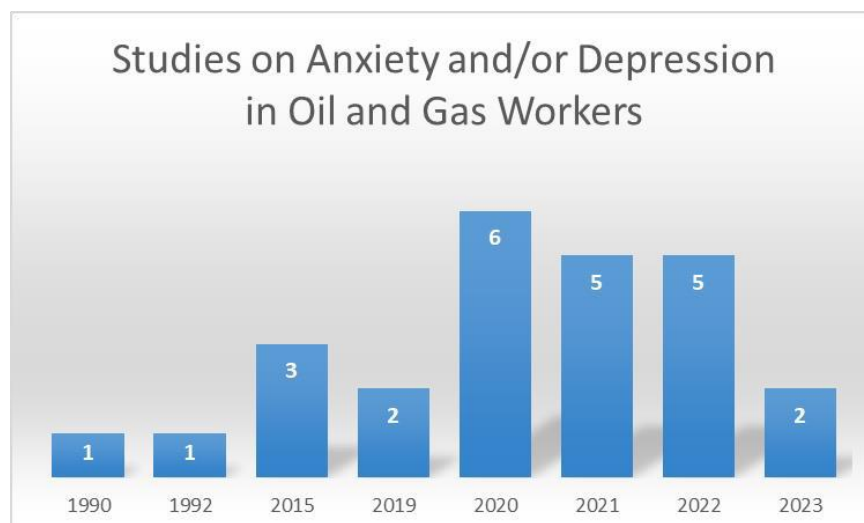


Figure 2. Studies analyzed by year on Anxiety and/or Depression in Oil and Gas Workers

Table 1 presents the 25 included studies and their main characteristics of the country, the number of participants, and which of them investigated Anxiety and/or Depression.

Table 1. Overview of studies investigating anxiety and/or depression among workers of the Oil and Gas Industry

Author	Country	Sample size	Anxiety	Depression	Assessment tool
(Alroomi & Mohamed, 2021a)	Kuwait	387 workers	YES	YES	Depression, Anxiety, and Stress Scale-21 (DASS-21); The Hospital Anxiety and Depression Scale (HSCL-25 or HADS); The Hopkins Symptom Checklist-25
(Alroomi & Mohamed, 2021b)	Kuwait	387 workers	YES	YES	The questionnaire was modified based on the use of validated scales.
(Alroomi & Mohamed, 2022)	Kuwait	387 workers	YES	YES	The questionnaire only utilized certain questions from validated scales.
(Arini <i>et al.</i> , 2023)	Indonesia	102 workers	YES	YES	Generalized Anxiety Disorder (GAD-7); The Kessler Psychological Distress Scale questionnaire
(Baygi <i>et al.</i> , 2022)	Iran	278 workers	YES	YES	Depression, Anxiety, and Stress Scale-21 (DASS-21)
(Bazazan <i>et al.</i> , 2019)	Iran	287 workers	YES	YES	The Multidimensional Fatigue Inventory (MFI-20), General Health Questionnaire (GHQ-28).
(Benson <i>et al.</i> , 2021)	Nigeria	327 workers	YES	YES	General Health Questionnaire (GHQ-28)
(Berthelsen <i>et al.</i> , 2015)	Norway	1471 workers	YES	YES	Hospital Anxiety and Depression Scale (HADS); QPSNordic;
(D'Antoine <i>et al.</i> , 2023)	Australia	37 workers	YES	NO	Self-developed questionnaire
(Fitriani <i>et al.</i> , 2022)	Indonesia	1542 workers	YES	YES	Generalized Anxiety Disorder (GAD-7); Patient Health Questionnaire (PHQ-9)
(Gann <i>et al.</i> , 1990)	North Sea	795 workers	YES	YES	Goldberg <i>et al.</i> Questionnaire
(Gu <i>et al.</i> , 2020)	China	1836 workers	NO	YES	Centre for Epidemiologic Studies Depression Scale (CES-D)
(Guangchao <i>et al.</i> , 2020)	China	1521 Workers	NO	YES	Centre for Epidemiologic Studies Depression Scale (CES-D)
(Jiang <i>et al.</i> , 2020)	China	3631 workers	YES	YES	Symptom Checklist-90
(Jiang <i>et al.</i> , 2021)	China	3631 workers	YES	YES	Symptom Checklist-90
(Kulip <i>et al.</i> , 2022)	Malaysia	300 workers	YES	YES	Depression, Anxiety, and Stress Scale-21 (DASS-21)
(Mohammadi, 2020)	Iran	282 workers	YES	YES	General Health Questionnaire (GHQ-28)
(Parkes, 1992)	United Kingdom, Scotland	172 workers	YES	NO	General Health Questionnaire (GHQ) scores

Author	Country	Sample size	Anxiety	Depression	Assessment tool
(Parkes, 2015)	United Kingdom	775 workers	YES	NO	General Health Questionnaire Anxiety (GHQA)
(Pavicic Zezelj et al., 2019)	Middle East *	2015 workers	YES	YES	Generalized Anxiety Disorder (GAD-7)

* Not specified country.

Figure 3 shows the origin of the workers who participated in the analyzed studies. Most participants in the studies under scrutiny hail from China, representing 42% of the total population investigated in this research endeavour. After China, Iran contributed 22%, while the United Kingdom and Indonesia each contributed 10%. The remaining countries, collectively constituting less than 10% of the population, include Norway (9%), Nigeria (2%), Malaysia (2%), Kuwait (2%), Italy (1%), and Australia, with the smallest representation. Furthermore, collaborative endeavours involving multinational companies are underway in other countries. In total, this study encompasses 16,746 workers from diverse global locations, including participants holding various positions ranging from directors to operators and administrative and operational staff.

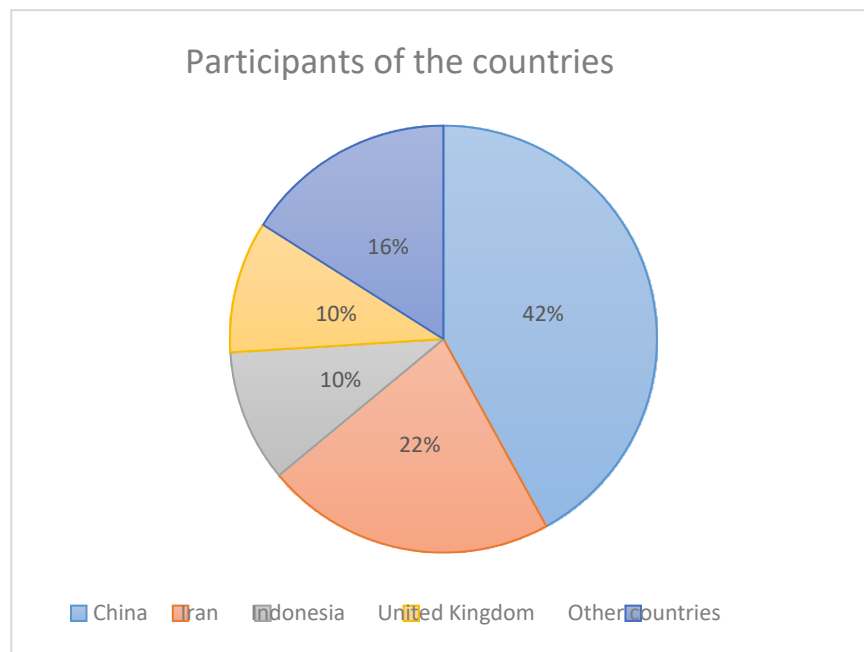


Figure 3. Origin of the workers that participated in the studies analyzed

4. Discussion

Based on the data presented and the information provided regarding the distribution of participants across different countries, several points can be discussed in the context of the findings and implications of the study:

Geographical Representation:

The distribution of participants across different countries reflects the global scope of the study. China emerges as the country with the most significant representation, followed by Iran, the United Kingdom, and Indonesia (Arini *et al.*, 2023; Gu *et al.*, 2020; Parkes, 2015; Sadeghniaat-Haghighi *et al.*, 2021). Despite the diverse geographical and cultural locations, similar patterns of anxiety and depression have been identified among workers across various cultural and socio-economic contexts. Similar variables were analyzed across the different research efforts. The characteristics of the respondents included age, education history, marital status, nutritional status, exercise habits, smoking habits, and disease history.

Workforce Distribution:

The studies included in this analysis were predominantly focused on workers within the oil and gas sector. Studies do not encompass the broader population of workers, even within the respective countries. For example, the table provides a snapshot of anxiety and depression among workers in various countries. Studies from China predominantly concentrate on depression, whereas research from Iran, Indonesia, and Kuwait tends to report both anxiety and depression among workers (Alroomi & Mohamed, 2021b; Arini *et al.*, 2023; Gu *et al.*, 2020; Sadeghniaat-Haghighi *et al.*, 2021). Notably, most of the studies originate from the same continent, which is understandable given the concentration of oil and gas industries in that region. However, it is essential to highlight that some of the largest oil companies also operate extensively in the Americas, yet none of the studies reviewed were conducted there. This gap indicates that, despite the growing interest in the mental health conditions of workers in the oil and gas industry, further research is needed, particularly in these underrepresented regions. Conducting studies in these areas would provide a more comprehensive perspective and facilitate comparisons regarding the development and consequences of mental health conditions among workers globally.

Yearly Frequency Trends:

Analyzing the studies reveals a fluctuating pattern in the frequency of occurrences over the years, with a notable escalation observed from 2015 onwards, suggesting a potential shift or increase in contributing factors. The significant peak in 2020 denotes a noteworthy event or change, likely associated with the COVID-19 pandemic, which may have contributed to a surge in anxiety and depression symptoms (Baygi *et al.*, 2022; Fitriani *et al.*, 2022; Kulip *et al.*, 2022). The consistent recurrence of five studies in 2021 and 2022 suggests a sustained trend, possibly influenced by ongoing factors or conditions related to the pandemic. However, the observed drop in frequency in 2023 hints at a temporary deviation from the established pattern, potentially indicating a period of adjustment or a decrease in the acute impacts observed during the peak years.

5. Limitations

The limitations of this study are primarily centered around the fact that most studies conducted in different countries are the first ones reported. Therefore, it is not possible to ascertain whether there has been an increase in incidence or prevalence over the years. Additionally, the analysis focused solely on anxiety and depression symptoms, neglecting other mental disorders that may also affect worker well-being. Furthermore, despite the strict procedures employed during the search, the applied keywords and language filters may have excluded some relevant studies.

6. Conclusions

The results of these cross-country studies reveal a notable willingness among companies to engage in comprehensive research endeavours, indicating their recognition of the significance of comprehending and addressing mental health issues within the workplace. Such collaborative efforts will likely involve implementing interventions directed at fortifying mental well-being and mitigating work-related stressors, thereby potentially alleviating anxiety and depression symptoms among employees. Moreover, it is important to cultivate collaboration among employers, policymakers, and healthcare providers to effectively execute strategies to promote global mental health and well-being among workers.

Finally, the necessity for further research is underscored to offer nuanced insights and serve as a roadmap for tailoring public policies to address the specific challenges faced by oil and gas industry workers globally. The overarching goal is to cultivate healthier workplace environments and enhance the mental well-being of workers and their families on a global scale, thus contributing to a more sustainable and supportive industry landscape.

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