

**Natalia Maria Simionato**

**EFFECTS OF SEXISM IN THE WORKPLACE ON MENTAL HEALTH:  
A SYSTEMATIC REVIEW**

Dissertation presented to Universidade Federal de São Paulo – Escola Paulista de Medicina, to obtain the degree of Master in Science.

São Paulo

2020

**Natalia Maria Simionato**

**EFFECTS OF SEXISM IN THE WORKPLACE ON MENTAL HEALTH:  
A SYSTEMATIC REVIEW**

Dissertation presented to Universidade Federal de São Paulo – Escola Paulista de Medicina, to obtain the degree of Master in Science.

**Advisor:**

Prof. Deborah Suchecki

São Paulo

2020

Simionato, Natalia Maria

**Effects of sexism in the workplace on mental health: a systematic review** / Natália Maria Simionato. – São Paulo, 2020.

xviii, 98f.

Dissertação (Mestrado)—Universidade Federal de São Paulo. Escola Paulista de Medicina. Programa de Pós-Graduação em Psicobiologia.

Título em português: Efeitos do sexismo no trabalho sobre a saúde mental: uma revisão sistemática

1. Systematic Review. 2. Sexism. 3. Gender-Based Violence 4. Workplace. 5. Occupational Stress 6. Depression.

**UNIVERSIDADE FEDERAL DE SÃO PAULO**  
**ESCOLA PAULISTA DE MEDICINA**  
**GRADUATION PROGRAM OF PSYCHOBIOLOGY**

Department Chairperson

José Carlos Fernandes Galduroz

Coordinator of the Graduate Program

Vânia D'Almeida

**Natalia Maria Simionato**

**EFFECTS OF SEXISM IN THE WORKPLACE ON MENTAL HEALTH:  
A SYSTEMATIC REVIEW**

**President of the Examining Committee:**

Dr. Deborah Suchecki

**Examining Committee:**

Prof. Mariana Cabral Schweitzer

Prof. Maria Paz Hidalgo

Prof. Fátima Cristina Smith Erthal

I dedicate this Master to all of my ancestors and the strong women who came before me, whose fight for survival, quality of life, equality and justice not only paved the way for my achievement of this dream, but also inspired me to persevere.

## Acknowledgments

I first express my gratitude to my family: Claudia Simionato and Luiz Simões for being the foundation of who I am; my brother, João Gabriel Simionato, for all the support and great talks; my grandparents Hebe Martins da Silva and José da Silva for all the love and care; and Oswaldo and Aurora Simionato, who even from afar, left a mark in who I am today.

Then, I thank my advisor, Dr. Deborah Suchecki, who I have been following for the last seven years. Beyond being a role-model, I thank her for teaching, encouraging, supporting and believing in me through this whole journey of becoming a scientist. For accepting me as her undergraduate student, and later as her Masters student; for accepting my project to study sexism. For all the guidance, supervision and corrections, even in the most difficult times, I thank her. I also thank Janaina Rocha-Lopes for supporting and instructing me at the beginning of my academic journey and Priscila B. G. Godoy for being my collaborator in this project; together, we shared many precious moments of learning.

To my UNIFESP friends, with whom I shared the best and the worst moments of this journey. For all support, conversations, activism, afternoon teas, Finessinha's snacks and everything else that made this process a little lighter and much more pleasurable: Paula Sumaran, Priscila Prado, Nathália Kozikas, Guilherme Tonon, Gabriella Campagnoli, Márcio Braga, Dimitri Daldegan, Flavia Boos, Ricardo França, Leticia Pichinin, Anna Carolina Muniz and Itamar Félix. To Vitor Villar, Susy Tassini and Erica Rocha, friends I made during the organization of the 19<sup>th</sup> and 20<sup>th</sup> editions of Curso de Verão em Psicobiologia, I thank you for showing me we can flourish and create strong connections in the adversity. I also thank Dimitri Daldegan for all the love, care and partnership, for his willingness to share this unexpected piece of life with me.

To Marjory Dezen for being my mentor as an English teacher, for encouraging me to embrace and improve this new ability. More than a colleague, she is a friend who was, along with Beatriz Peruncelli and Wesley Soares, fundamental for me to become the professional I am. For the advices and teaching tips I thank them.

To Andressa Oliveira and Marine Vitti, my high-school friends, for creating such a strong bond to remain in my life after so many years, after so many changes we have been through.

To Isabel Lucas, my psychologist, whose work was fundamental in the process of self-discovery, acceptance and personal growth inherent to life. She certainly helped (and still helps) making a lot of these difficulties lighter.

To the governments of Luis Inácio Lula da Silva and Dilma Rousseff, which, despite all the due critics, I must recognize, opened several doors and forged many different life paths for less privileged people. Without the promotion of social rights they made, I would probably never access a public university, and for that I express my gratitude. I also thank Alexandra Elbakyan for her restless efforts for making science accessible. Finally, I thank Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) for the Masters scholarship I received, without which it would be impossible to accomplish this study, Associação Fundo de Incentivo à Pesquisa (AFIP), Department of Psychobiology and Universidade Federal de São Paulo for financial and infrastructure support.



## **Agradecimentos**

Primeiramente, expresso gratidão à minha família: Claudia Simionato e Luiz Simões por serem a base de que meu sou; meu irmão, João Gabriel Simionato, por todo o apoio e boas conversas; meus avós Hebe Martins da Silva e José da Silva por todo amor e cuidado; e Oswaldo e Aurora Simionato, que mesmo de longe, deixaram sua marca em quem sou hoje.

Em seguida, agradeço minha orientadora, Dra. Deborah Suchecki, a quem tenho acompanhado nos últimos sete anos. Além de ser um modelo, a agradeço por ensinar, incentivar, apoiar e acreditar em mim durante toda essa jornada para me tornar uma cientista. Por ter me aceitado como aluna de iniciação científica, e depois como aluna de mestrado; por aceitar meu projeto para estudar sexismo. Por toda a orientação e correções, mesmo nos momentos mais difíceis, a agradeço. Também agradeço a Janaina Rocha-Lopes por me apoiar e instruir no início da minha trajetória acadêmica e a Priscila B. G. Godoy por ser minha colaboradora nesse projeto; juntas compartilhamos diversos momentos preciosos de aprendizado.

Aos meus amigos da UNIFESP, com quem compartilhei os melhores e piores momentos dessa jornada. Por todo o apoio, conversas, ativismos, chás da tarde, lanches no Finessinha e tudo mais que tornou esse processo um pouco mais leve e muito mais prazeroso: Paula Sumaran, Priscila Prado, Nathália Kozikas, Guilherme Tonon, Gabriella Campagnoli, Márcio Braga, Dimitri Daldegan, Flavia Boos, Ricardo França, Leticia Pichinin, Anna Carolina Muniz e Itamar Félix. A Vitor Villar, Susy Tassini and Erica Rocha, amigos que fiz na organização da 19ª e 20ª edições do Curso de Verão em Psicobiologia, agradeço por me mostrarem que é possível florescer e criar fortes laços mesmo na adversidade. Também agradeço Dimitri Daldegan por todo o amor, cuidado e parceria, por aceitar dividir comigo esse pedaço de vida inesperado.

A Marjory Dezen, por ser minha mentora como professora de Inglês, por me incentivar a aceitar e desenvolver essa nova habilidade. Mais que uma colega de trabalho, ela é uma amiga que, junto com Beatriz Peruncelli e Wesley Soares, foi fundamental para que me tornasse a profissional que sou hoje. Os agradeço por todos os conselhos e dicas de ensino.

A Andressa Oliveira e Marine Vitti, amigas do colégio, por criarem um laço tão forte capaz de mantê-las em minha vida após tantos anos, após tantas mudanças que sofremos.

A Isabel Lucas, minha psicóloga, cujo trabalho foi indispensável no processo de auto-descoberta, aceitação e crescimento pessoal inerente a estar viva. Ela certamente ajudou (e ainda ajuda) a tornar essas dificuldades mais amenas.

Aos governos de Luis Inácio Lula da Silva e Dilma Rousseff, que, apesar de todas as devidas críticas, reconheço que abriram diversas portas e forjaram vários caminhos de vida diferentes para pessoas menos privilegiadas. Sem a promoção de direitos sociais que fizeram, eu provavelmente nunca acessaria uma Universidade Pública, e por isso expresso minha gratidão. Também agradeço a Alexandra Elbakyan por seus esforços incansáveis para tornar a ciência acessível. Finalmente, agradeço à Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) pela bolsa de mestrado que recebi, sem a qual a realização deste trabalho seria impossível, à Associação Fundo de Incentivo à Pesquisa (AFIP), ao Departamento de Psicobiologia e à Universidade Federal de São Paulo (UNIFESP) pelo apoio financeiro em infraestrutura.

## Summary

Acknowledgments .....	vii
Agradecimentos .....	ix
Summary .....	xi
Figure List .....	xiii
Table list.....	xiv
Abstract.....	xv
Resumo.....	xvii
<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 OBJECTIVES.....</b>	<b>7</b>
2.1 Main Objective .....	7
2.2 Specific Objectives.....	7
<b>3 METHODS .....</b>	<b>8</b>
3.1 Inclusion and exclusion criteria .....	10
3.2 Data extraction .....	10
3.3 Quality assessment.....	10
<b>4 RESULTS.....</b>	<b>12</b>
4.1 Descriptive information.....	12
4.2 Sexual harassment/assault .....	22
4.2.1 Military sexual trauma (MST) .....	25
4.3 Gender wage gap.....	28
4.4 Career progression .....	29
4.5 Sex discrimination .....	30
<b>5 DISCUSSION .....</b>	<b>65</b>
5.1 Future perspectives.....	69

**6 CONCLUSIONS..... 70**

**7 REFERENCES..... 71**

Appendix 1 - Ethic Committee Approval..... 87

Appendix 2 – PROSPERO Registration ..... 87

Appendix 3 – Newcastle-Ottawa Scale ..... 95

Appendix 4 – PRISMA Checklist..... 97

## Figure List

- Figure 1. Flowchart of studies retrieved and included in this systematic review. 9
- Figure 2. Number of articles included in the sample by period of publication. 12
- Figure 3. Countries represented in the studies. 13
- Figure 4. Number of articles that evaluated each type of sexism. In the intersections are the number of articles that assessed more than one type. MST: Military Sexual Trauma. 16
- Figure 5: A: Representation of cohort and cross-sectional studies included in this review (n = 47). B: Representation of studies that sampled only women or men and women in this review (n = 47). 16
- Figure 7. Representation of work areas and types of sexism sampled by the studies included in this review (n = 47). 18

## Table list

Table 1. PICOS (Population, Intervention, Comparison, Outcomes and Study Types) that guided the systematic review. ....	8
Table 2. Relevant articles of other subjects excluded from the sample. ....	14
Table 3. Newcastle-Ottawa Scale scores of included cross-sectional studies. ....	20
Table 4. Newcastle-Ottawa Scale scores of included cohort studies ....	22
Table 5. Demographic information of articles. ....	33
Table 6. Articles about sexism in the workplace and depression which sampled exclusively women (n = 22). Information on exposures, evaluation instruments for depression and comorbidities and main results.....	40
Table 7. Articles about sexism in the workplace and depression which included women and men (n = 25). Information on exposures, evaluation instruments for depression and comorbidities and main results.....	49
Table 8. Number of studies that found each result regarding exposure to sexism in the workplace. ....	62
Table 9. Number of studies that found each result regarding the impact of exposure to sexism in the workplace in depression. ....	62
Table 10. Correlation results in studies that sampled only women.....	63
Table 11. Correlation results in studies that sampled men and women. ....	63

## Abstract

**Objective:** To identify the effects of sexism in the workplace (in the forms of sexual harassment, payment inequality, career progression obstacles and sex discrimination) on workers' mental health through a systematic review of the scientific literature.

**Method:** A search strategy with Boolean Operators, MeSH terms and keywords related to working women, sexual and workplace harassment, gender pay gap, career mobility and depressive symptoms or disorders was applied in five databases (PubMed, PsycInfo, Web Of Science, LILACS and CINAHL), from which 1613 articles were analysed by title and abstract, 314 read in full by two reviewers and 105 matched the inclusion criteria. Data of interest from 58 articles were not available for extraction, thus these were excluded. Comorbidities (e.g., anxiety, post-traumatic stress disorder, sleep problems) were only included if the study also assessed depression. The final sample consisted of 47 articles, which had their methodology assessed through the Newcastle-Ottawa Scale. **Results:** The most commonly studied subject was sexual

harassment. Several work areas and different country populations are represented in these articles, being the United States of America the most common affiliation source of authors. All studies were published by, or in collaboration with Universities in developed countries. Few studies considered gender according to self-report and the intersection between sex and race, highlighting the need for more studies about sexism in the workplace being conducted around the world, especially in underdeveloped and developing countries, which are currently underrepresented. Data extracted from 47 articles suggest that women are more exposed to sexual harassment and assault in the workplace, have lower salaries, face more gender-related barriers to job promotions and are more exposed to sex discrimination at work. These exposures seem to increase the risk for depression and comorbidities regardless of sex, although women are, in general, more exposed and more affected by these disorders.

**Conclusion:** Women are, in general, more exposed to all sexism-related events at work. Exposure to sexual harassment or assault in the workplace, gender wage gap, difficulties in job promotions or career progression and sex discrimination at work seem to promote mental health disorders such as depression and comorbidities in both sexes. Some results suggest that men might be more vulnerable to develop psychological disorders after being sexually harassed or assaulted in the workplace,

however, women are more exposed and more affected by the disorders evaluated in this review.



## Resumo

**Objetivo:** Identificar os efeitos do sexismo no trabalho (nas formas de assédio sexual, desigualdade salarial, obstáculos para progressão na carreira e discriminação sexual) sobre a saúde mental de trabalhadores através de uma revisão sistemática da literatura científica. **Métodos:** Uma estratégia de busca foi desenvolvida utilizando Operadores Booleanos, termos MeSH e palavras-chave relacionadas a trabalhadoras, assédio sexual, desigualdade salarial entre homens e mulheres, progressão na carreira e sintomas ou transtornos depressivos. A busca foi realizada em cinco bases de dados (PubMed, PsycInfo, Web Of Science, LILACS and CINAHL), das quais 1613 artigos foram analisados por título e resumo, 314 lidos na íntegra por duas revisoras e 105 obedeceram aos critérios de inclusão. Dados de interesse de 58 artigos não estavam disponíveis para extração e por isso estes foram excluídos. Comorbidades (por exemplo: ansiedade, transtorno de estresse pós-traumático e distúrbios do sono) foram incluídos somente se o estudo também tivesse avaliado depressão. A amostra final foi composta por 47 artigos, que tiveram sua qualidade metodológica avaliada através da escala Newcastle-Ottawa. **Resultados:** O assunto mais comumente estudado foi assédio sexual. Diversas áreas de trabalho e populações de vários países estão representadas nesses artigos, sendo os Estados Unidos da América a fonte mais comum de afiliação dos autores. Todos os estudos foram publicados por, ou em colaboração com Universidades em países desenvolvidos. Poucos estudos consideraram auto-declaração de gênero e a intersecção entre sexo e etnia, evidenciando a necessidade de mais estudos sobre sexismo no sendo conduzidos ao redor do mundo, especialmente em países subdesenvolvidos e em desenvolvimento, que atualmente estão subrepresentados. Dados extraídos de 47 artigos sugerem que mulheres são mais expostas a assédio e abuso sexual no ambiente de trabalho, recebem menores salários, vivenciam mais dificuldades ligadas ao gênero para progredir na carreira, além de serem mais expostas a discriminação sexual no trabalho. Essas exposições parecem aumentar o risco para depressão e comorbidades independentemente de sexo, porém mulheres são, em geral, mais expostas e mais acometidas por esses transtornos. **Conclusão:** Mulheres são, em geral, mais expostas a todos os eventos ligados a sexismo no trabalho. Sofrer assédio ou abuso sexual no ambiente de trabalho, desigualdade salarial, dificuldades para

progredir na carreira e discriminação sexual no trabalho parecem contribuir para o desenvolvimento de transtornos psicológicos como depressão e comorbidades em ambos os sexos. Alguns resultados sugerem que homens podem ser mais vulneráveis aos transtornos psicológicos após sofrerem assédio ou abuso sexual no trabalho, porém mulheres são mais comumente vitimizadas e mais afetadas pelos transtornos avaliados nessa revisão.

## 1 INTRODUCTION

In the last century psychiatric disorders became a critical public health concern due to the growing prevalence, in addition to the productive, financial and life impairments caused by these conditions.<sup>(1–3)</sup> It is estimated that 10% of the world population (including children) suffer from, at least, one mental disorder.<sup>(4)</sup> The Global Burden of Disease estimates that in 2015 more than 267 million people had anxiety disorders and more than 311 million had depressive disorders worldwide, representing an increase of respectively 14.9% and 18.4% compared to the previous decade.<sup>(3)</sup> In 2017, an article published by the same study group placed depressive disorders as the third leading cause of years lived with disability (non-fatal health loss) worldwide for both sexes<sup>(5)</sup>, being the leading cause of mental disability worldwide.<sup>(6)</sup> Depression is a broad term that covers several different diagnostics; however, the main symptoms are persistent sadness and loss of interest for pleasurable activities; minor symptoms of depressive disorders may include alterations of sleep, eating, memory and cognition.<sup>(7)</sup> As a multifactorial disorder, the onset of depression is influenced by the interaction between genetic, social and environmental factors.<sup>(8)</sup>

Studies show that depressive disorders are nearly twice as more prevalent in women than in men.<sup>(9–11)</sup> This difference seems to emerge after puberty<sup>(12)</sup>, although the reasons for this are not yet clear. As for the onset of psychiatric disorders, the evidence regarding the prevalence differences between men and women points out to a combination of biological, psychological and social factors.<sup>(13)</sup> In line with this idea, it is worth mentioning that increased risk for depression in women may be partly explained by ovarian hormone fluctuations<sup>(14)</sup> and differences in emotional processing and regulation, women being more reactive to emotional stimuli and less efficient in emotion regulation than men.<sup>(15)</sup> Moreover, there are differences in the socialization process, in which men are encouraged to react to stress acting out (for example, expressing anger) and women, to hold back their emotions. These differences in expression of emotions could induce sex differences in coping strategies<sup>(16,17)</sup>, which might explain why women exhibit more mood disorders, whereas men, more substance abuse disorders in adulthood.<sup>(11,16,18)</sup> Furthermore, there are differences in the symptoms exhibited by depressed men and women, with men presenting more intense and often alcohol and other drugs misuse, risk taking and poor impulse control,

while women display more appetite and sleep disturbances, fatigue, depressed mood, sexual disturbances and loss of libido.<sup>(19)</sup>

Chronic exposure to psychological stress increases the long-term risk for developing psychiatric disorders.<sup>(20)</sup> Most impairments caused by chronic stress are attributed to the prolonged activation of the Hypothalamic-Pituitary-Adrenal (HPA) axis, the main neuroendocrine stress response system, which culminates with the secretion of glucocorticoids by the cortex of the adrenal glands.<sup>(21)</sup> Evidence suggests that high waking cortisol plasma levels<sup>(22)</sup>, in saliva in the morning and at night<sup>(23)</sup>, and in the urine during the day<sup>(24)</sup> are related to depressive symptoms, indicating a correlation between this physiologic mechanism and the onset of psychiatric disorders. Chronic high levels of perceived stress increase salivary cortisol levels in the morning, and this effect is greater in women.<sup>(25,26)</sup> Free cortisol levels are directly influenced by the levels of cortisol binding globulin (CBG), a protein that binds to cortisol, preventing activation of its receptors.<sup>(27)</sup> Despite the sexual differences in stress appraisal and response<sup>(15,21)</sup>, studies in humans are not consistent in regards to higher cortisol secretion in women<sup>(28,29)</sup>, perhaps due to sex differences in CBG levels and sex steroids secretion, which in turn modulate cortisol bioavailability.<sup>(30)</sup>

The Stress Sensitization Model suggests that over time less intense stressful situations are sufficient to induce depressive episodes, and after the sensitization, these episodes can happen spontaneously.<sup>(31)</sup> Socioeconomic and psychosocial difficulties in adulthood are associated with depressive symptoms after retirement.<sup>(32)</sup> A cohort study conducted by Johansson and colleagues between 1968 and 2003 in Sweden showed that prolonged stress is associated with increased risk for dementia in women, confirming the long-lasting impairment caused by some stressors.<sup>(33)</sup> In another study performed by the same group, a cohort of Swedish women was evaluated between 1968 and 2005 for several stressful stimuli and 25% of the interviewees were exposed to one, 23% to two, 20% to three and 16% to four of the stressors that were assessed; moreover, the higher the number of stressors the higher the long-term perceived stress.<sup>(34)</sup> Thus, women may develop more mood disorders than men, not because they are more vulnerable, but because they are more exposed to stressors. In this case, greater exposure to stressors could result in more sensitization, as proposed in the Stress Sensitization Model.

Exposure to stressful life situations such as childhood abuse<sup>(35)</sup>, multifactorial discrimination<sup>(36)</sup>, workplace stress<sup>(10)</sup> and military trauma<sup>(37)</sup> increases the risk of developing depression.<sup>(38)</sup> Ethnic and sexual discrimination may also be considered stressors, since they are associated with lower psychological and physical well-being<sup>(39,40)</sup>, increased psychiatric symptoms<sup>(39,40)</sup>, lower job satisfaction<sup>(41)</sup> and reduced self-esteem.<sup>(42)</sup> Jackson and colleagues showed that obese people who reported more perception of prejudice because of their body weight had higher hair cortisol than those who did not report this perception.<sup>(43)</sup> Ethnic or socio-economic discrimination are also associated to higher hair cortisol<sup>(44)</sup>, confirming the stressful nature of being a victim of prejudice. One study with homo- and bisexual men and women showed that the combination of all types of discrimination someone experiences is associated with chronic tension, more stressful life events, that were identified as risk factors for depression, and reduced psychologic well-being.<sup>(36)</sup> Despite the variability in these results, which can be explained by differences in social support<sup>(45,46)</sup>, individual interpretation of events<sup>(47)</sup>, feelings of control<sup>(45)</sup> and coping strategies<sup>(48)</sup>, the impact of exposure to prejudice on mental health is noteworthy.

When discussing discrimination-related social issues, it is essential to evaluate which groups detain actual power in the organization of society. Being a victim of prejudice is more impactful and more recurrent for social groups that are historically oppressed, since they have less power in the social structure.<sup>(49)</sup> Nevertheless, social prejudiced groups may experience a sense of lack of control facing discrimination, added to the fear of being seen as “troublemakers” for denouncing injustices.<sup>(49,50)</sup> Sexism is the discrimination based on sex-gender.<sup>(51)</sup> A study conducted in the USA using the Schedule of Sexist Events Inventory showed that 100% of the interviewed women reported having experienced some type of sexist behaviour in their lifetime, and the same result was found regarding the previous year; 94% of the interviewees had been sexually harassed at least once in their lifetime, more than 92% had been disrespected for being a woman and approximately 25% of these women reported having experienced these events often.<sup>(52)</sup> Other results from the same study show that women are exposed to sexism in different life areas and from different people, indicating that sexist behaviours are generalized in society. Almost 80% of these women felt that their lives would be different if they had not been treated unfairly because of their gender and 27% reported some previous mental illness.<sup>(52)</sup> Another

study that used a USA nationally representative sample of women and men investigated lifetime experiences of sexual harassment or assault, showing that victimization by sexual harassment is related to depression and anxiety in both sexes regardless of race/ethnicity; however, in this study men were less likely to report depression or anxiety related to these experiences in comparison to women. <sup>(53)</sup> Moreover, exposure to everyday sexist incidents is associated with more anger, lower self-esteem in the social domain, and more depression in college students of both sexes. However, women are more frequently exposed to these events (once or twice a week), whereas men are less often exposed. <sup>(54)</sup>

The history of Western feminist movement is usually comprised of four waves. The first wave is dated to the late 19<sup>th</sup> and beginning of the 20<sup>th</sup> century and was characterized by the fight for equal work opportunities and the right to vote. The second wave emerged after the Second World War, in the 1960s and 1970s, and was marked by women's empowerment and pursuit of affirmative actions, a debate that was also raised by other marginalized groups. Both third (the 1990s) and fourth (2010's) waves were strongly oriented by notions of diversity, emphasizing that women are a heterogeneous group and should be contemplated in their particularities related to ethnicity, sexual orientation, gender identity, etc. The singularity of the fourth wave is the embracement of technology as a tool for engagement, organization, and activism, which may have contributed to the dissemination of feminist ideas in the last few years. <sup>(55–57)</sup> Despite the fight for women's rights being historical, some relevant goals, such as the pay equality that started in the second feminist wave, are still unsolved issues.

Work plays a vital role in contemporary life. Regardless of the world trend for reduction of working hours, the maximum weekly labour time officially allowed in most countries varies between 40 to 48 h<sup>(58)</sup>, accounting for approximately 35 to 42% of the weekly active time (excluding the populational average of 8 h of sleep/day). However, commuting and extra hours should also be accounted as work-related time, since they demand the workers' availability to their occupations<sup>(59)</sup>, increasing this average. Therefore, it comes as no surprise that workplace or labour-related events affect the workers' physical and mental health<sup>(60,61)</sup>, fuelling a cycle in which mental disorders are an important cause of work absence leading to productive, financial and social losses.<sup>(2,61,62)</sup> Job strain is related to short-<sup>(63,64)</sup> and long-term<sup>(65)</sup> mental health impairments, and a meta-analysis evidenced no sex difference in the effect of

workplace environment on depressive symptoms under similar work conditions.<sup>(66)</sup> , Socioeconomic status (SES) represents a major stress-related factor, inasmuch as European individuals from lower status have more depression and anxiety-related work absence.<sup>(67)</sup> In studies with wild baboons<sup>(68)</sup> and three-shrews<sup>(69)</sup>, low positions in the social hierarchy are associated with greater stress whereas high-ranking position and dominant animals display lower basal levels of cortisol. Finally, workers with low decision latitude (freedom to decide how to do the work and use of skills) have increased risk of developing anxiety and depression regardless of sex, although the effects are greater in women.<sup>(10)</sup>

In Western countries, women's entrance into the job market took place during the First Industrial Revolution, and because gender roles were rigorous, women were hired mainly by the textile industry.<sup>(70)</sup> Even decades later, women still must overcome challenges in many different areas of their professional careers due to sexism, including the ones related to gender roles. One example is that women with high decision latitude over other people's jobs exhibit more depressive symptoms than women without this authority. For men, the relationship is the opposite, suggesting that exerting power in the workplace may expose women to several interpersonal issues related to gender roles and, therefore, be more stressful.<sup>(71)</sup> Other difficulties frequently mentioned are reconciling motherhood and work<sup>(72–74)</sup>, the gender composition of the workplace<sup>(75–77)</sup> and the wage gap between men and women.<sup>(78)</sup> The latter is also related to increased levels of generalized anxiety disorder and depression in the USA.<sup>(78)</sup> In Brazil, a survey of the governmental Institute for Applied Economic Research (IPEA) in 2011 showed that earnings of white women corresponded to 55% and the gains of black women corresponded to a dramatic 30.5% of that of white men's.<sup>(79)</sup> However, this study did not present details on whether these comparisons were made between men and women in the same job ranking since it only evaluated the population's average earnings. Regarding opportunities for career progression, the scenario is very similar, as one study of 2010 made by Ethos Institute with the 500 largest companies in Brazil shows that the higher the position, the lesser the female presence, with only 13.7% of executive positions occupied by women.<sup>(80)</sup> In a survey in the USA, 87% of women reported having been exposed to sexism by their employers<sup>(52)</sup> and they also often suffer sexual harassment in their workplaces<sup>(46)</sup>, an event that is related to health issues such as hypertension and poor sleep.<sup>(81)</sup> Finally,

one study published in 1994 estimated that women's self-perceived health would equal men's at 58 years of age if they had the same levels of paid employment, income, economic hardship and housework. By that time, it only happened around 67 years. In this study men reported better health than women, but this advantage waned with age, possibly due to its association with work issues. Men also had higher incomes, experienced less economic hardship, outcomes associated with good health, and were responsible for less housework than women. Women, in turn, had higher levels of psychological distress, which was associated with poor health. This study concluded that men's health advantage over the life course may be partially explained by gender inequalities in paid work and households, along with their social psychological correlates.<sup>(82)</sup>

Considering that discrimination and, more specifically sexism, is a social stressor that contributes to the onset of psychiatric disorders<sup>(36,40,54)</sup>, that stress in the workplace is also related to these disorders<sup>(10,61,63,65)</sup> and that depressive disorders may be considered the leading cause of mental disability worldwide, the main purpose of this systematic review was to identify the literature available about sexism in the workplace as a risk factor for depression. Sexism was evaluated in the forms of sexual harassment in the workplace, difficulties in career progression arising from gender issues, and payment inequalities.



## **2 OBJECTIVES**

### **2.1 Main Objective**

The main objective of this study was to evaluate the effect of sexism in the workplace on the mental health of female workers.

### **2.2 Specific Objectives**

This study sought to identify, through a systematic review of the scientific literature, whether there are gender differences in the exposure to sexism in the workplace in the forms of:

- Sexual harassment and assault;
- Gender wage gap;
- Gender difficulties for career progression;
- Gender harassment and discrimination.

Moreover, we intended to identify if these exposures are risk factors for the onset of depression and comorbidities, and if so:

- Identify if there are differences in the impact of different types of sexism on mental health;
- Identify gender differences in the impact of these exposures on mental health.

### 3 METHODS

This study was approved by the University's ethics committee (CEP/UNIFESP: 0438/2018) and pre-registered on PROSPERO (CRD42020167784).

Data collection was carried out in February of 2019 by electronic search on MEDLINE (PubMed), LILACS, CINAHL, Web Of Science and APA PsycNET (PsycInfo) without date limits. The search strategy was based on PICOS methodology<sup>(83)</sup> and included elements that referred to Population (working women), Exposures (sexism in the workplace, sexual harassment in the workplace, payment inequality and slower career progression) and Outcomes of interest (depression or depressive symptoms) which can be found on Table 1. The proper MESH Terms and keywords unregistered on MESH Tree Structure were selected, resulting in the following search strategy: (Women OR Women, working) AND (((Sexism OR Gender-Based Violence OR Bullying OR Non-Sexual - Sex Offenses OR "Gender harassment" OR "gender prejudice" OR "gender inequality" OR "gender disparity" OR "sexist events") AND (Workplace OR Employment)) OR (Sexual Harassment OR Harassment) OR ("Wage gap" OR "wealth inequality" OR "wealth gap") OR (Career Mobility OR "Career progression") OR (Workplace Violence OR Occupational Stress OR Workplace Incivility OR mobbing)) AND (Depression OR Depressive Disorder OR "Mood Disorders" OR Bipolar Disorder OR Adjustment Disorders OR "psychiatric disorders").

**Table 1. PICOS (Population, Intervention, Comparison, Outcomes and Study Types) used to guide this systematic review.**

<b>Population</b>	Working women
<b>Intervention/ Exposure</b>	Sexism in the workplace
	Sexual Harassment in the workplace
	Unequal payment between women and men
	Slower career progression
	Sex discrimination at work
<b>Comparison</b>	Men or unexposed women
<b>Outcomes</b>	Depression and comorbidities
<b>Study Types</b>	Observational studies

After the search, identification of duplicated articles was performed by R software coding (version 3.62), comparing titles without spaces and special characters. Articles that appeared in more than one database were manually excluded before the title and abstract selection, being read only in the first database from which they were retrieved. All articles were then analyzed by title and abstract by one reviewer (N.M.S.), excluding only studies that clearly did not match the inclusion criteria. Studies pre-selected for inclusion were read in full by two reviewers (N.M.S and P.B.G.G.) independently and disagreements in selection were solved in consensus, consulting a third reviewer (D.S.) whenever necessary.

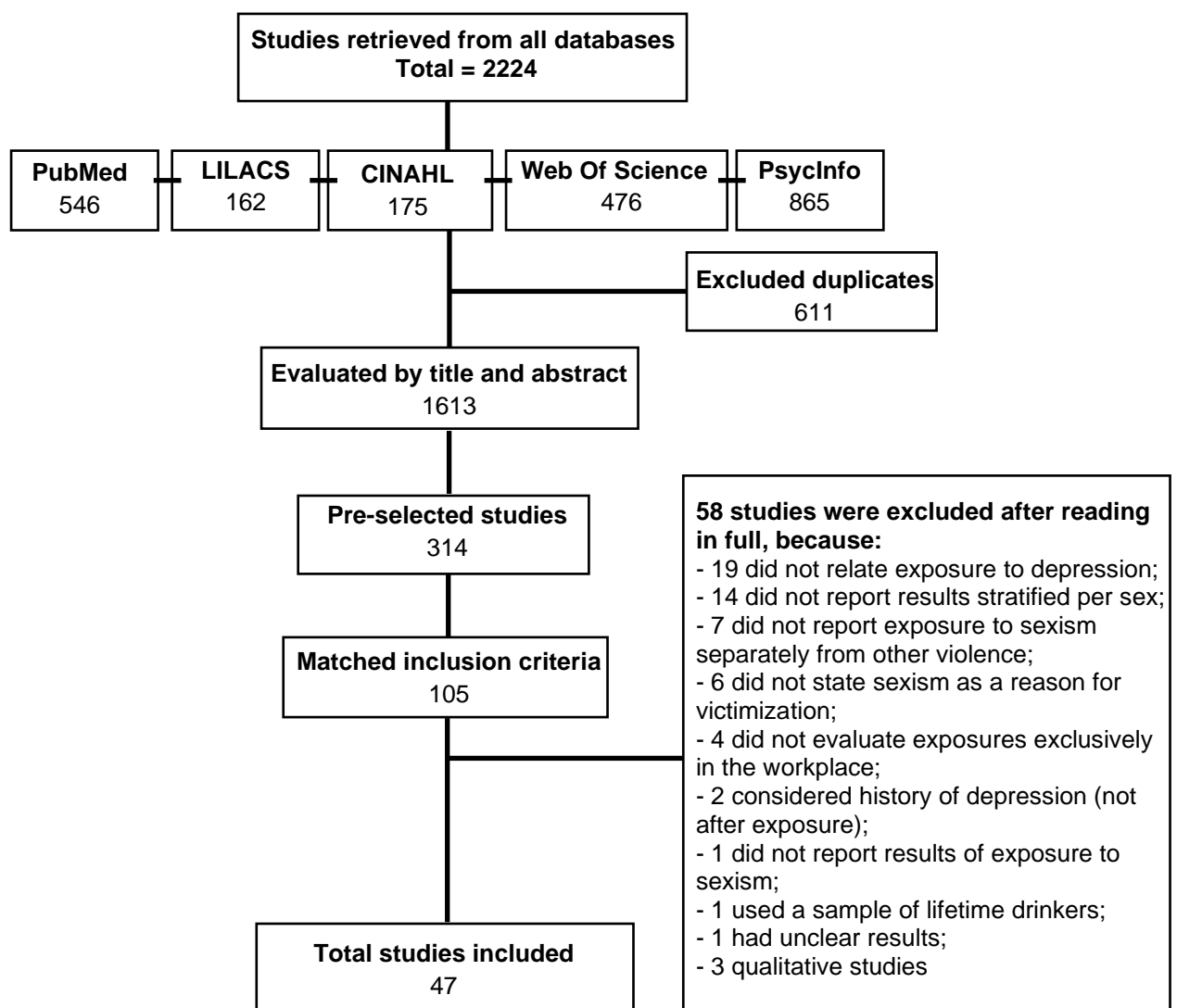


Figure 1. Flowchart of studies retrieved and included in this systematic review.

### **3.1 Inclusion and exclusion criteria**

Studies that evaluated sexual and gender harassment in the workplace, income inequality between men and women and differences in career progression for women compared to men (e.g., access to job promotions) were included. In addition, studies should contain some form of evaluation of depressive symptoms or depression diagnosis. Only observational studies published in English, Portuguese or Spanish in peer-review indexed journals, with no limit date of publication, were included.

Studies about motherhood and work, sex work and gender composition of the workplace were excluded since they did not suit the initial goals of this review, therefore, the search strategy was not designed to identify these exposures. Moreover, we chose not to include these exposures because they show specificities that demand careful interpretation even though they represent some form of sexism at work. Qualitative studies were excluded for similar reasons.

### **3.2 Data extraction**

Data extraction was carried out by one reviewer (N.M.S) in a Microsoft Excel sheet containing the following information: identification of the paper (complete citation), study type, sample size, percentage of women in the sample, type of sexism evaluated (and mean of assessment), main objectives and characteristics of the study, assessment of depression, possible comorbidities (and how they were assessed), other issues unrelated to the main goal of this systematic review, and main results concerning exposure to sexism and its relationship with depression and comorbidities. Results were summarized through a narrative synthesis and studies were grouped and compared according to methodological or outcome similarities.

### **3.3 Quality assessment**

The Newcastle-Ottawa Scale (NOS – Appendix 3)<sup>(84)</sup> was used to carry out the quality assessment of all articles included. Two versions of the scale are available: case-control and cohort and in both versions, the instrument assesses three fundamental domains that may be significant sources of bias. In the case-control scale,

the Selection domain contains four questions evaluating, respectively, the adequacy of the case definition (e.g., scales, self-report), representativeness of the cases (was the sampling adequate? Was the sample recruited from more than one source? Does it have the potential to introduce selection bias?), selection of controls (were they from the same population as cases?), and the definition of controls (were they healthy in the beginning of the study?). Since all included articles were cross-sectionals, in which the definition of cases/controls (i.e. depressed/non-depressed subjects) was accomplished after data collection, the question regarding definition of controls was considered “non applicable”. The second domain is related to Comparability, containing only one question on whether the study controls for important confounding factors. Finally, the third domain concerns Exposure, with three questions assessing, respectively, ascertainment of exposure (e.g., scales, self-report), if the same method of collection was applied for cases and controls, and the non-response rate (is the value reported in the article? Was the rate similar between groups?).

In the Cohort scale, the first domain also assesses Selection, with four questions regarding, respectively, the representativeness of the exposed cohort (was it truly or somewhat representative of the community average?), selection of the non-exposed cohort (was it drawn from the same community?), ascertainment of exposure (e. g. scales, self-report), and demonstration that the outcome of interest was not present in the beginning of the study or was controlled for. The second domain regards Comparability, with parameters similar to the Case-control scale. The third domain concerns the Outcome, with three questions tacking, respectively, the outcome assessment (e.g., scales, self-report), the follow-up time (was it long enough for the outcome of interest to occur?) and the adequacy of follow-up cohort (were there losses? Were the subjects lost on the follow-up likely to introduce bias?). For both versions of the scale, the articles may score one star per question, except for the Comparability, which can yield from zero to two stars according to the number of variables that were controlled in the study.

## 4 RESULTS

### 4.1 Descriptive information

The search retrieved 546 articles on MEDLINE, 162 on LILACS, 175 on CINAHL, 476 on Web Of Science and 865 APAPsycNET (PsycInfo). Of these, 611 duplicated articles were manually excluded. The final sample had 1613 articles, from which 315 articles were selected for full reading and 105 matched the inclusion criteria. Data from 47 articles were included in this systematic review. Further details can be found in Figure 1.

Most studies (39 of 47, i.e., 83%) were published by North-American Universities and 37 of them sampled North-American population; one assessed Brazilians and the other, Ethiopians. Two articles were carried out by Australian Universities, two from German Universities and the remaining four were from South Korea, Thailand, United Kingdom and Italy, but the latter contains data of the European Union and other European countries (Figure 3). All articles were published in English. The first article concerning sexism in the workplace and depression was published in 1979, followed by the ones published in the decade of 1990. The distribution of included articles per year can be found in Figure 2. Further information on authors, year of publication, journal, country, study type, sample size, percentage of women in the sample, work area and types of sexism assessed by each article can be found in Table 2.

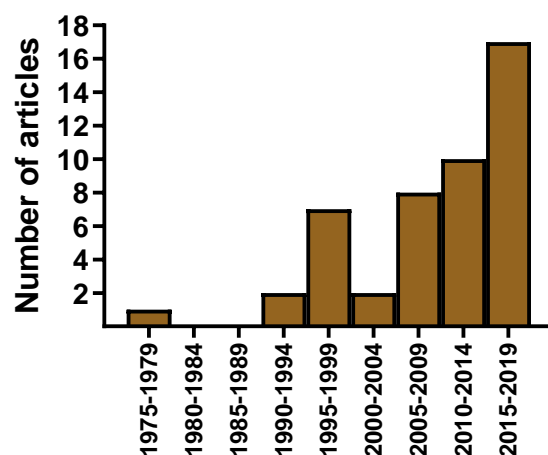


Figure 2. Number of articles included in the sample by the period of publication.

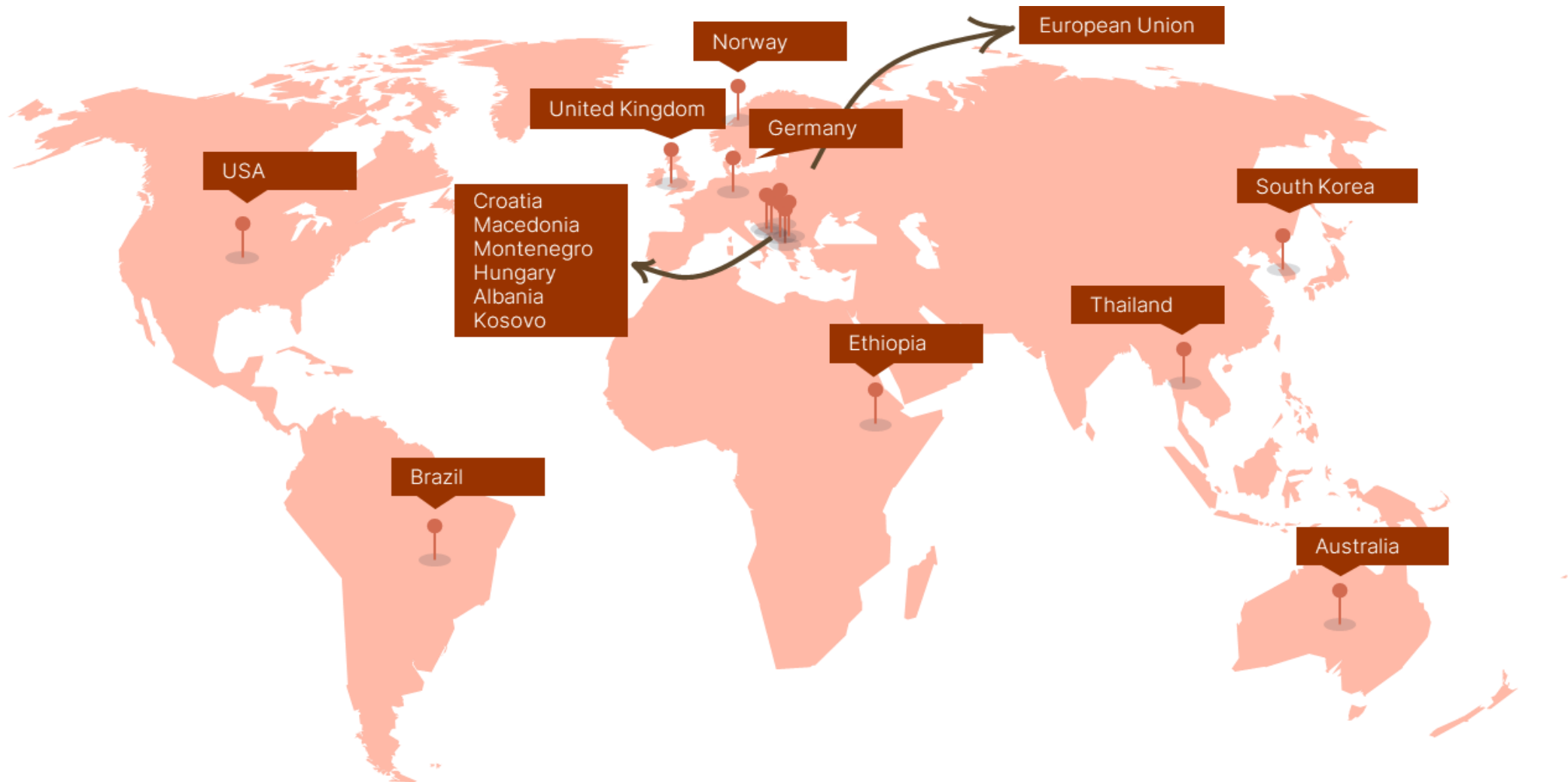


Figure 3. Countries represented in the studies. Adapted from Fresh Folk illustrations by Leni Kauffman (<https://fresh-folk.com/>).

Among the studies read in full, 17 evaluated depression and exposure to forms of sexism in the workplace other than our objectives, thus they were excluded. Of these, 5 were focused on motherhood, 5 were focused on sex-workers, 4 evaluated gender composition of the workplace, 3 were focused on gender roles and one studied gender differences in occupational stress across occupational groups, but was not focused on sexism. Furthermore, one book chapter about sexual harassment to female family practice residents in the USA, rescued from APAPsycNET, was also excluded. Information regarding these articles can be found in Table 2.

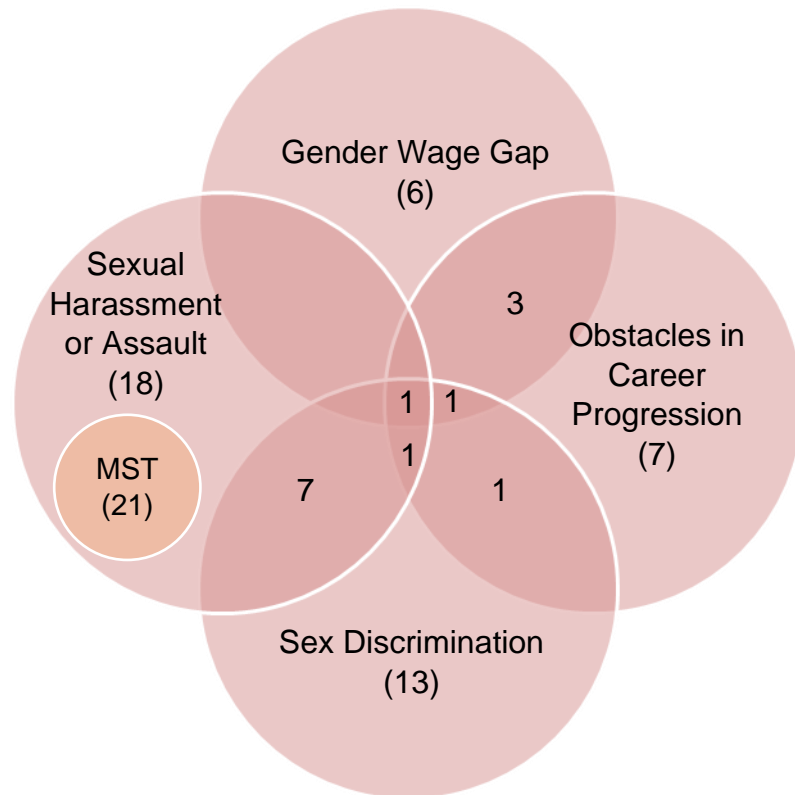
**Table 2. Articles that assessed other forms of sexism and were excluded from the sample.**

Title	Authors/Year	Subject
Occupational gender composition and mild to severe depression in a Swedish cohort: The impact of psychosocial work factors	Nyberg et al., 2018 <sup>(75)</sup>	WGC
Gender composition of the occupation, sexual orientation, and mental health in young adulthood	Ueno et al., 2018 <sup>(77)</sup>	WGC
An index to characterize female career promotion in academic medicine	Brüggmann et al., 2017 <sup>(85)</sup>	WGC
Working in gender-dominated occupations and depressive symptoms: findings from the two age cohorts of the lidA study	Tophoven et al., 2015 <sup>(76)</sup>	WGC
Does being a mom help or hurt? Workplace incivility as a function of motherhood status	Miner et al., 2014 <sup>(73)</sup>	Motherhood
Mental health in female veterinarians: effects of working hours and having children	Shirangi et al., 2013 <sup>(74)</sup>	Motherhood
The psychosocial work environment and maternal postpartum depression	Dagher et al. 2009 <sup>(86)</sup>	Motherhood
The significance of employment for chronic stress and psychological distress among rural single mothers	Turner, 2007 <sup>(87)</sup>	Motherhood
The stress of managerial and professional women: Is the price too high?	Beatty, 1996 <sup>(72)</sup>	Motherhood
Female sex workers and the social context of workplace violence in Tijuana, Mexico	Katsulis et al., 2010 <sup>(88)</sup>	Sex work
An assessment of the mental health of street-based sex workers in Chennai, India.	Suresh et al., 2009 <sup>(89)</sup>	Sex work
Posttraumatic stress disorder among female street-based sex workers in the greater Sydney area, Australia	Roxburgh et al., 2006 <sup>(90)</sup>	Sex work
Trafficked female sex workers awaiting deportation: comparison with brothel workers	Cwikel et al., 2004 <sup>(91)</sup>	Sex work
Women brothel workers and occupational health risks	Cwikel et al., 2003 <sup>(92)</sup>	Sex work
Exploring causal effects of combining work and intergenerational support on depressive symptoms among middle-aged women.	Opree and Kalmijn, 2012 <sup>(93)</sup>	Gender roles
Multiple Roles of Married Korean Women: Effect on Depression.	Lee et al., 2004 <sup>(94)</sup>	Gender roles
The fulfillment of career dreams at midlife: does it matter for women's mental health?	Carr, 1997 <sup>(95)</sup>	Gender roles

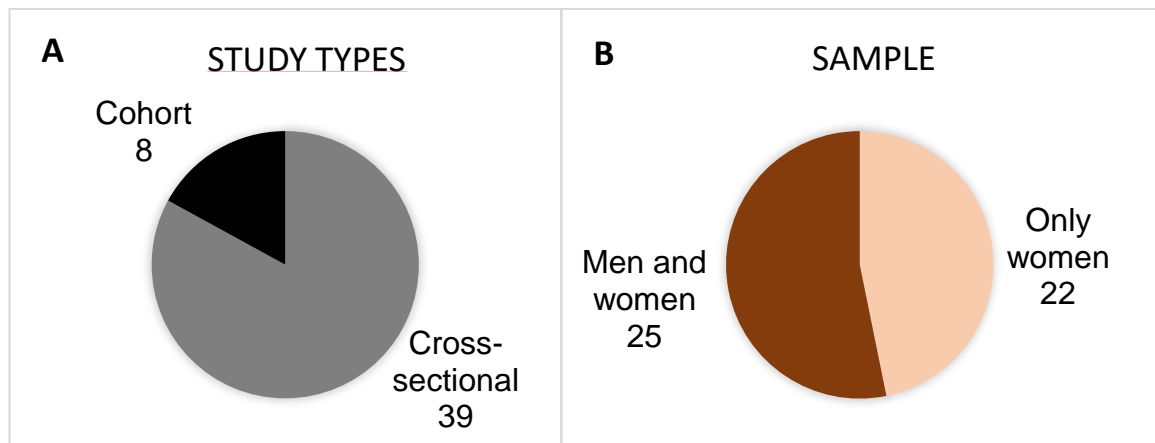
WGC: Workplace Gender Composition.



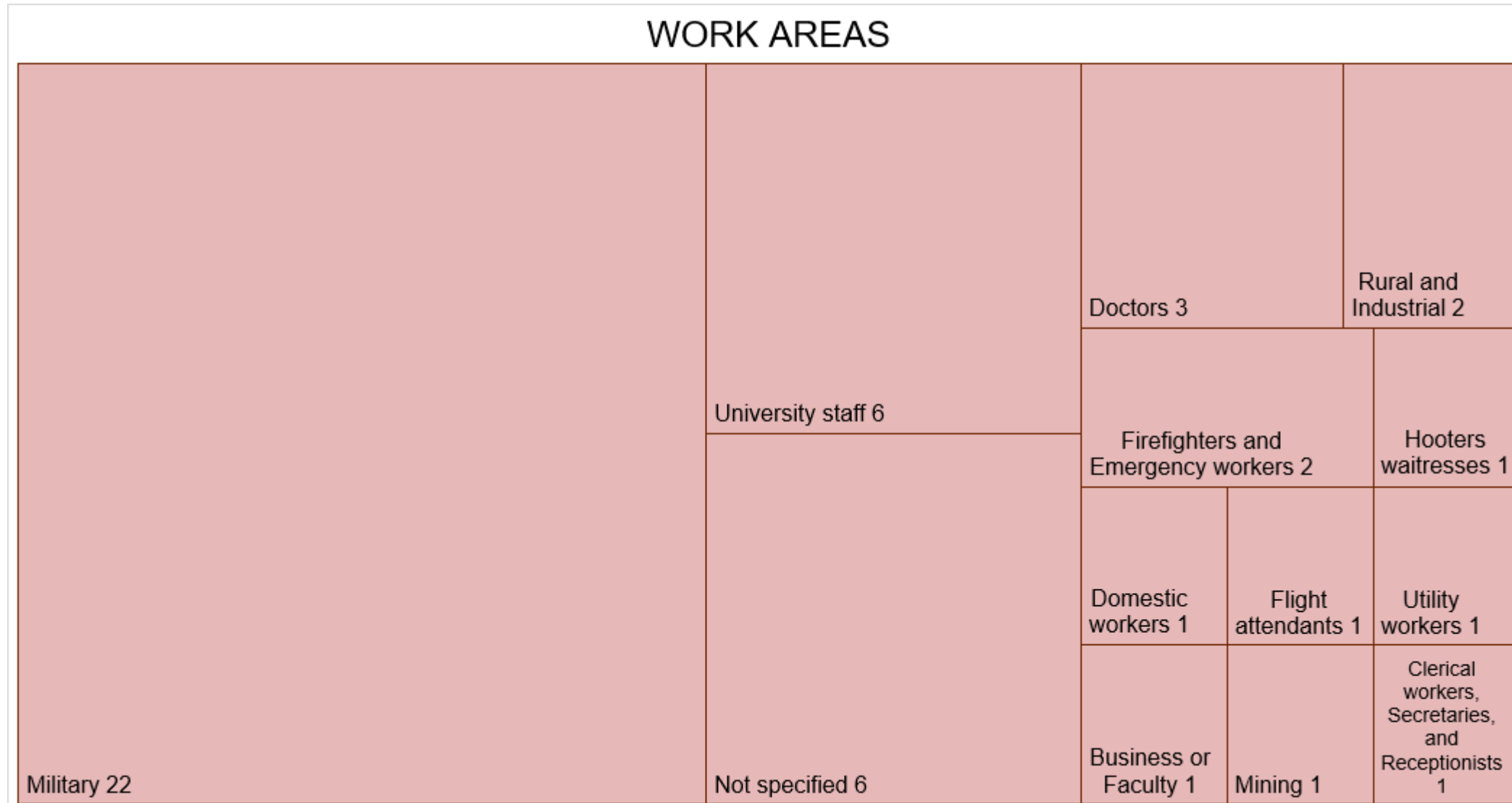
Sexual harassment in the workplace was the most common issue in the articles of this review. Thirty-nine studies evaluated some type of sexual harassment or assault, from which 21 focused specifically on military sexual trauma. The second most common issue evaluated was gender discrimination in the workplace, in 13 articles. Seven articles assessed gender inequalities in career progression and six evaluated wage inequality (Figure 4). Three of the selected articles included evaluations of sex work, motherhood and gender composition of the workplace in addition to the target-exposures of the present study. Eight articles were cohort studies and 39, cross-sectional studies, with four of them reporting data of ongoing longitudinal studies (Figure 5). In one of the cohort studies, the data of interest was only collected in the first assessment, thus although this is a longitudinal study, the data extracted is cross-sectional.<sup>(96)</sup> Twenty-two studies were about military personnel (Army or Marines), five sampled faculty and/or university staff, three studied doctors and three studied rural and/or industrial workers, of which one sampled women in a male-dominated union. Two studies evaluated firefighters and/or emergency health professionals. The following categories were sampled by only one study each: mining women, domestic workers, waitresses of hooters-like restaurants, flight attendants, clerical workers, secretaries, or receptionists, and faculty members or mid-level business managers in the fields of accounting, advertising, banking, or law. Six studies did not provide information on the participants' work area, and one only separated the workers in high- or low-skilled, blue- or white-collar (Figures 6 and 7). Twenty-five of the 47 articles sampled men and women, one did not provide the percentage of women in the sample and in the remaining 24 it varied from 7.0% to 79.4% (Figure 5). Further descriptive information is available in Table 5.



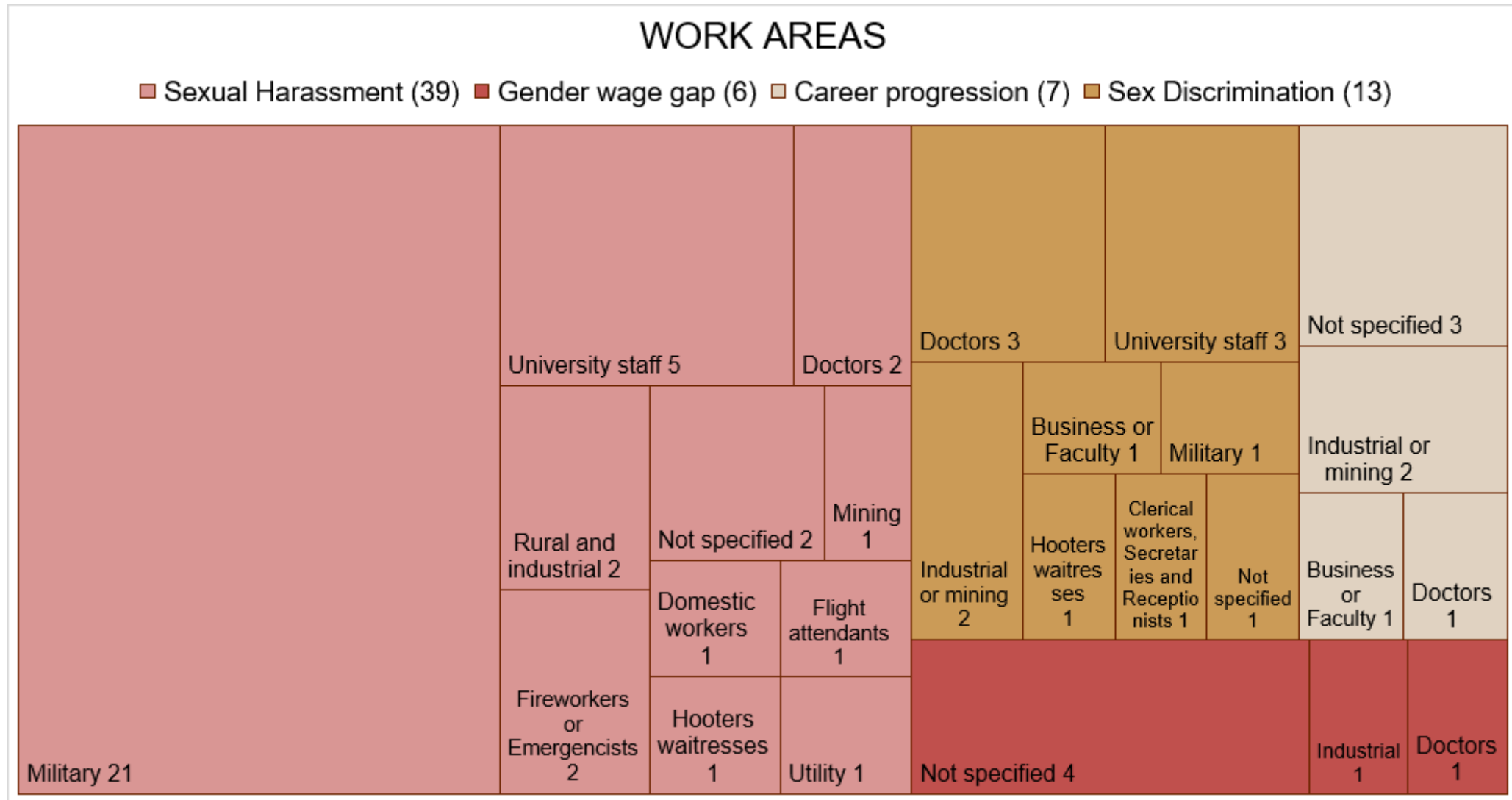
**Figure 4. Number of articles that evaluated each type of sexism. The intersections represent the number of articles that assessed more than one type of sexism. MST: Military Sexual Trauma.**



**Figure 5: A: Representation of cohort and cross-sectional studies included in this review (n = 47). B: Representation of studies that sampled only women or both, men and women, in this review (n = 47).**



**Figure 6.** Representation of the number of studies by work area included in this review ( $n = 47$ ). Square's sizes are proportional to the number of articles that sampled each work area.



**Figure 7.** Representation of work areas and types of sexism sampled by the studies included in this review (n = 47). Square's sizes are proportional to the number of articles that sampled each work area.

The vast diversity of definitions for sexism adopted in the studies, as well as the myriad of instruments used to assess sexism and depression hinder the performance of a meta-analysis. For this reason, a qualitative synthesis of results will be presented. Exposure to sexism in the workplace was gathered by interviews, self-reports, validated scales and questions elaborated or adapted from scales. Regarding depression assessment, most studies used questionnaires and one did not report how depression was evaluated. Only seven studies did not assess depression by using scales. Of these, two used self-report, four articles used diagnostic interview (one of them combined DSM-V-based interview and the Patient Health Questionnaire Depression Scale (PHQ), version 9) and one used medical records. The Center for Epidemiologic Studies Depression Scale (CES-D) was the most frequently used scale (17 articles), followed by the PHQ-9, which was used in seven articles and PHQ version 8, in two articles. The Beck Depression Inventory (BDI) was used in three studies. Depression Anxiety Stress Scale (DASS), Psychiatric Symptom Checklist (SCL-90) and Mental Health Index (MHI) were used in two studies each. Finally, the World Health Organization well-being index (WHO-5) and Brief Symptom Inventory were used only in one study each. One study used simultaneously the Hopkins Symptoms Checklist-25 (HSCL-25) and Mental Health Assessment Project (MHAP) subscales for depression. One study included questions regarding symptoms of depression in their evaluation. Tables 6 and 7 present the details on sexism and depression measurements of studies that sampled only women and women and men, respectively. Tables 8 and 9 present the summaries containing the number of articles that found different classes of results and Tables 10 and 11 present correlations of studies that sampled only women and women and men, respectively.

The vast majority of studies were published by North-American Universities; indeed, all studies were from, or in collaboration with Universities of developed countries, even though some underdeveloped and developing countries are represented in the samples (Albania, Brazil, Croatia, Ethiopia, Hungary, Kosovo, Macedonia, Montenegro and Thailand). Moreover, a strict number of work areas are represented, and the lack of standard assessment of sexism hinders the comparison among the results. Therefore, these results may not reflect the reality of every population and country, which may be considered a limitation of the studies in this review - despite our efforts to include the greatest diversity possible. Likewise, it is

worth mentioning that no study accounted for sexual orientation, with only one addressing the intersection between gender and race<sup>(97)</sup>, and two studies considering gender according to self-report.<sup>(98,99)</sup>

The quality assessment revealed that several studies have samples that require careful interpretation, either for studying clinic populations (e.g., military professionals that used the health system of Veteran Affairs) or for sampling exclusively from one workplace (e.g., a single enterprise or university). Moreover, the assessment of exposure to sexism was accounted for as self-report or questions elaborated by the researchers in several studies. Although less common, in many cases the assessment of depression was also performed by self-report or using isolated questions from scales. Complete ratings can be found in Table 3, for cross-sectional studies, and in Table 4 for cohort studies.

**Table 3. Newcastle-Ottawa Scale scores of included cross-sectional studies.**

Citation	Selection				Comparability	Exposure		
	1 (0-1)	2 (0-1)	3 (0-1)	4 (0-1)	(0-2)	1 (0-1)	2 (0-1)	3 (0-1)
Welner et al., 1979 <sup>(100)</sup>	1	1	0	N/A	2	0	1	1
Firth-Cozens, 1990 <sup>(101)</sup>	1	1	N/A	N/A	N/A (only correlations)	1	N/A	N/A
Murdoch and Nichol, 1995 <sup>(102)</sup>	1	1	1	N/A	2	0	1	0
Ross and Mirowsky, 1996 <sup>(103)</sup>	1	1	1	N/A	2	0	1	1
Fitzgerald et al., 1997 <sup>(104)</sup>	1	1*	N/A	N/A	2	1	1	1
Frank et al., 1998 <sup>(105)</sup>	0	1	1	N/A	2	0	1	1
Piotrkowski, 1998 <sup>(106)</sup>	1	0	1	N/A	2	0	1	1
Magley et al., 1999 <sup>(107)</sup>	0	1	1	N/A	0	1	1	1
Richman et al., 1999 <sup>(108)</sup>	1	0	1	N/A	2	1	1	1
DeRoma et al., 2003 <sup>(109)</sup>	1	0	1	N/A	0	0	1	0
Vogt et al., 2005 <sup>(110)</sup>	1	0	1	N/A	1	0	1	0

Miner-Rubino and Cortina, 2007 <sup>(111)</sup>	1	1*	N/A	N/A	2	1	1	1
Street et al., 2007 <sup>(112)</sup>	1	0	N/A	N/A	2	1	1	1
Street et al., 2008 <sup>(113)</sup>	1	0	1	N/A	2	1	1	1
DeSouza and Cerqueira, 2009 <sup>(114)</sup>	1	1	1	N/A	2	1	1	1
Marsh et al., 2009 <sup>(115)</sup>	1	0	1	N/A	0	0	1	1
Kimerling et al., 2010 <sup>(116)</sup>	1	0	1	N/A	2	1	1	N/A
Dutra et al., 2011 <sup>(117)</sup>	1	0	1	N/A	0	1	1	0
Kelly et al., 2011 <sup>(118)</sup>	1	0	0	N/A	0	1	1	0
Weatherill et al., 2011 <sup>(119)</sup>	1	1	1	N/A	N/A (only correlations)	1	1	1
Maguen et al., 2012 <sup>(120)</sup>	1	0	1	N/A	2	0	1	0
Gradus et al., 2013 <sup>(121)</sup>	1	1	1	N/A	0	1	1	1
Pavao et al., 2013 <sup>(122)</sup>	1	0	1	N/A	2	0	1	N/A
Ardito et al., 2014 <sup>(123)</sup>	1	1	1	N/A	2	0	1	N/A
Szymanski and Feltman, 2014 <sup>(124)</sup>	1	0	1	N/A	N/A (only correlations)	1	1	N/A
Stahlman et al., 2015 <sup>(125)</sup>	0	1	1	N/A	2	0	1	N/A
Cohen et al., 2016 <sup>(126)</sup>	1	1	1	N/A	0	1	1	1
Kearns et al., 2016 <sup>(127)</sup>	1	0	1	N/A	2	1	1	1
Meyer et al., 2016 <sup>(128)</sup>	1	1	1	N/A	2	1	1	1
Platt et al., 2016 <sup>(78)</sup>	1	1	1	N/A	2	0	1	N/A
Goldstein et al., 2017 <sup>(129)</sup>	1	0	1	N/A	2	0	1	1
Hom et al., 2017 <sup>(99)</sup>	1	1	1	N/A	0	0	1	1
Rubin et al.,	1	0	1	N/A	2	1	1	1

2017 <sup>(130)</sup>								
Smith et al., 2017 <sup>(96)**</sup>	1	1	1	N/A	N/A (only correlations)	1	1	1
Blais et al., 2019 <sup>(131)</sup>	1	0	1	N/A	2	1	1	N/A
Gale et al., 2019 <sup>(132)</sup>	1	1	1	N/A	2	0	1	N/A
Gross et al., 2019 <sup>(37)</sup>	1	1	1	N/A	N/A (only correlations)	1	1	N/A
Rubin et al., 2019 <sup>(133)</sup>	1	0	1	N/A	N/A (only correlations)	0	1	1
Thurston et al., 2019 <sup>(81)</sup>	1	1	1	N/A	1	1	1	N/A
Yoo et al., 2019 <sup>(134)</sup>	1	1	1	N/A	2	0	1	1

\* All employees from one company or university were invited to participate. \*\* Although the study is a cohort, the results of interest were only collected and analyzed in T1, thus it was evaluated by the case-control version of the scale.  
N/A: Not applicable

**Table 4. Newcastle-Ottawa Scale scores of included cohort studies**

Citation	Selection				Comparability	Outcome		
	1 (0-1)	2 (0-1)	3 (0-1)	4 (0-1)	(0-2)	1 (0-1)	2 (0-1)	3 (0-1)
Reifman et al., 1991 <sup>(135)</sup>	1	0	1	1	1	1	1	0
Richman et al., 2004 <sup>(136)</sup>	0	1	1	0	2	1	1	1
Rospenda et al., 2006 <sup>(137)</sup>	0	1	1	0	2	1	1	1
Shipherd et al., 2009 <sup>(138)</sup>	0	1	1	0	N/A (only correlations)	1	1	0
Foyne et al., 2013 <sup>(97)</sup>	0	1	1	0	2	1	0	1
Peter et al., 2016 <sup>(139)</sup>	1	1	1	0	2	1	1	0
Wege and Siegrist, 2018 <sup>(140)</sup>	1	1	1	1	2	0	1	1

N/A: Not applicable

## 4.2 Sexual harassment/assault



Among the 18 studies of sexual harassment, eight sampled men and women. Two of the articles that sampled exclusively women (one is a sequence of the other) only mentioned that sexual harassment in the workplace was uncommon.<sup>(130,133)</sup> The article that reported the lowest percentage of workers exposed to sexual harassment revealed that 19% of the sample was victimized<sup>(81)</sup>, followed by a study with firefighters in which 22% of the sample reported being a victim of sexual harassment at work.<sup>(99)</sup> One study with Brazilian domestic workers assessed four aspects of sexual harassment: sexist hostility, sexual hostility, unwanted sexual attention and sexual coercion; 26% of interviewees had suffered some type of sexual harassment in the previous year and approximately half of them suffered from more than one type of harassment.<sup>(114)</sup> Another study with doctors showed that harassment was more common during training (30%) than during work (11%), and less common in specialties with fewer men.<sup>(105)</sup> One study with junior doctors reported that sexual harassment was considered a rare event, but when happened, it was the second main cause of workplace stress.<sup>(141)</sup> Finally, in a study with university staff using a five-item questionnaire dealing with specific types of sexual harassment, 46.8% of the women answered affirmatively to having being exposed to sexual harassment, but only 8% recognized the experience as harassment.<sup>(115)</sup> Five studies did not report frequency of exposure to sexual harassment/assault<sup>(104,108,111,124,136,137)</sup>, one study with flight attendants from both sexes reported that 26.4% of the sample suffered sexual harassment at work in the previous year and 2.1% suffered sexual assault, without showing sex-stratified results<sup>(132)</sup>, and only four studies compared the results between men and women. Three of them concluded that women were more exposed to sexual harassment and/or assault in the workplace than men.<sup>(123,128,134)</sup> However, in the study published by Richman and colleagues (1999) the results of exposure to sexual harassment depended on the work area: male service and clerical workers were more exposed to sexual harassment than women, while among faculty workers the results were the opposite, and no sex differences were found for student workers.<sup>(108)</sup>

Regarding institutional tolerance to sexual harassment, one study with utility workers showed that organizational tolerance increased sexual harassment, and that women in male-dominated workplaces had higher risk to suffer sexual harassment at work.<sup>(104)</sup> In a cohort study, from wave 2 (1997) to 3 (2001) there was a decrease in tolerance to sexual harassment and tendency to lower exposure of women (but not

men) to sexual harassment.<sup>(136)</sup> Among the abovementioned studies, three did not find a relationship between sexual harassment in the workplace and depression<sup>(123)</sup> or comorbidities<sup>(137)</sup>, but one of them reported a statistical trend ( $p = 0.06$ ) for increased depressive symptoms due to sexual harassment at work.<sup>(81)</sup> The same study showed that women harassed at work had impairment in sleep quality compatible with insomnia.<sup>(81)</sup> Four studies showed that sexual harassment increased anxiety in both sexes. In the study that showed sex differences in exposure to sexism according to work area, overall sexual harassment increased the risk for depression and anxiety in both men and women.<sup>(108)</sup> Moreover, one study with health professionals showed that male and female workers exposed to sexual harassment at work in the previous year had increased depressive symptoms without sex differences.<sup>(134)</sup> Another study showed association of sexual harassment and assault with increased anxiety symptoms in both men and women, but the impact of sexual harassment and assault on depressive symptoms was only found in men.<sup>(128)</sup> Finally, one study with flight attendants showed that sexual harassment and assault were more commonly practiced by passengers in comparison with supervisors or pilots, co-workers and others. In this study, sexual harassment increased depression, sleep problems and fatigue in both women and men, while sexual assault increased depression only in women.<sup>(132)</sup>

Six studies that sampled women exclusively and considered different work areas suggest a positive relationship between sexual harassment at work with depression or distress in women<sup>(101,104,115)</sup> and some of them also found this effect for anxiety<sup>(114,130)</sup>, PTSD<sup>(99)</sup> and suicide attempts.<sup>(105)</sup> Moreover, one study assessed exposure to sexual harassment, depression and anxiety in three waves. It showed that in the second wave, sexual harassment increased depression and anxiety in women, but only depression in men. In contrast, in the third wave, sexual harassment also increased depression and anxiety in women without any effect in men.<sup>(136)</sup> Four studies explored the correlation between sexual harassment in the workplace and mental health problems. Two of them evaluated only women and found correlations higher than 0.3 between sexual harassment at work and mental health problems, despite classifying sexual harassment in the workplace as uncommon.<sup>(130,133)</sup> Another study showed a correlation of 0.19 between sexually objectifying work environment to depression<sup>(124)</sup>, and the last showed a negative correlation between institutional

irresponsiveness to sexual harassment and psychological well-being in both women and men college staff.<sup>(111)</sup> Summarization of the number of articles that found each result can be found in Tables 6 and 7. Correlations of articles that sampled only women are shown in Table 8, and those that sampled both women and men, in Table 9.

#### **4.2.1 MILITARY SEXUAL TRAUMA (MST)**

Studies with military populations evaluated three categories of sexual stressors: military sexual trauma, sexual harassment and sexual assault. Despite the difference in labeling, according to the U. S. Department of Veteran Affairs, the term “military sexual trauma” also expresses victimization by sexual assault or harassment during military service<sup>(142)</sup>, but under this expression, it is not possible to distinguish whether one or both occurred, so for the scope of this review, we chose to present the results with the same expressions used by the authors of the original studies.

Twelve studies on military sexual trauma sampled men and women, and nine sampled only women; all of them were published by North-American affiliated authors. Among the studies that sampled only women, two reported only the frequency of exposure to military sexual harassment; one evaluated Marine recruits, of which 24% were victims<sup>(119)</sup> and in the other, 46% were victims.<sup>(127)</sup> Two studies reported data about sexual assault victimization, of which 13% of the women reported unwanted sexual contact in one study<sup>(125)</sup> and the other reported an age-dependent result: 25% of the veterans under 50 years reported actual or attempt rape by superiors or coworkers, but for veterans older than 50 this percentage was 8%.<sup>(102)</sup> Three studies contained simultaneous data of exposure to sexual harassment and to sexual assault; in one study 57% of the sample suffered at least one form of sexual harassment and 11% suffered unwanted sexual attempts.<sup>(117)</sup> Another study reported that 65% of the veterans suffered sexual harassment and 32% were victims of sexual assault in the Army.<sup>(129)</sup> In the third study, 75% of the veterans reported exposure to lifetime sexual harassment, being that 45% were victims in civil and military contexts and 15% only in the Army; 38% of the sample was raped, 9% in military, 20% in civil context and 9% in both contexts.<sup>(109)</sup> Two studies on assistance programs to victims of military sexual trauma reported that approximately 80% of the sample suffered from military sexual

trauma.<sup>(131,143)</sup> One study sampled only Marine personnel that endorsed at least one MST experience in the previous six months.<sup>(138)</sup>

Eight studies containing data from both sexes showed that women were statistically more exposed to MST<sup>(37,120,126)</sup> and sexual harassment than men<sup>(96,107,110,112,121)</sup>; from which two studies reported results of the four subitems of sexual harassment evaluation and women also had higher exposure in all of them.<sup>(107,112)</sup> Four studies reported the percentage of women and men exposed: in one of them 60.0% of women and 27.2% of men had suffered sexual harassment in service, whereas 13.1% of women and 1.6% of men suffered sexual assault.<sup>(113)</sup> In the second study, 15.1% of women and 0.7% of men were victims of military sexual trauma<sup>(116)</sup>, in the third, 6.6% of women and no men suffered sexual trauma<sup>(126)</sup> and in the last study, 39.7% of the female and 3.3% of male homeless veterans in the sample suffered military sexual trauma.<sup>(122)</sup> Of these eight papers, two studies that sampled only women and one that sampled veterans from both sexes did not find association between military sexual trauma and depression or comorbidities<sup>(117,126,143)</sup>, but in one, military sexual harassment increased the risk for PTSD.<sup>(117)</sup> The other five studies concluded that sexual trauma had an impact on mental health regardless of sex: increased risk for depression and PTSD was reported in veterans exposed to military sexual trauma in a study performed with a sample containing less than 8% of women.<sup>(120)</sup> Moreover, sexual harassment decreased well-being and health in both women and men in a mostly female sample (79%)<sup>(107)</sup>, whereas other two studies showed that military sexual trauma or sexual harassment increased depression, anxiety, PTSD and suicidal ideation regardless of sex.<sup>(116,121)</sup> In the study published by Street and colleagues sexual harassment increased the risk for depression in both women and men. In this study women who suffered sexual harassment or assault also had higher risk for current and lifetime PTSD.<sup>(113)</sup> One study reported that homeless veterans who suffered military sexual trauma had higher risk for depression<sup>(122)</sup>. Another study with veterans who had depression, anxiety symptoms, psychological stress, PTSD and suicide attempt since entry in the Army were more likely to report being victims of unwanted sexual contact. However, the authors did not specify whether the exposure was during the period in the Army or not.<sup>(125)</sup>

Regarding military sexual harassment, four studies sampling only female veterans found a positive association between this event and depression. Thus,

women exposed to military sexual harassment exhibited higher risk for depression and PTSD<sup>(129)</sup>, greater likelihood to also report history of anxiety and depression<sup>(102)</sup> and depressive and PTSD symptoms, suicidal ideation and probable diagnosis of PTSD in women exposed to sexual harassment, but this result was not revealed for probable depression diagnosis.<sup>(131)</sup> Military sexual harassment was a predictor of major depressive disorder and depressive symptoms, with no effect on PTSD symptoms or diagnosis.<sup>(127)</sup> One study in civil and military contexts found no association between sexual harassment and depression, and a significant correlation between rape (in civil or a combination of civil and military contexts) and depression and anxiety scores.<sup>(109)</sup> Two of the abovementioned studies also showed that female veterans exposed to sexual assault were more likely to have depression, PTSD<sup>(129)</sup> and greater symptom severity.<sup>(131)</sup> Nevertheless, two studies that sampled men and women showed stronger relationship between military sexual harassment and depression, anxiety<sup>(110)</sup> and mental health impairment<sup>(112)</sup> in men, despite the fact that women were more likely to report exposure to sexual harassment in both studies. These studies also showed that military sexual harassment increased the risk for PTSD<sup>(110,112)</sup>, but in this case, the sexual differences were not clear.

Some studies only explored correlations: two found correlations of, respectively, 0.29 and 0.15, between MST and depression among women, whilst for men it was 0.10 in one study and in the other the correlation did not reach statistical significance.<sup>(37,138)</sup> Also, Gross and colleagues found a correlation of 0.34 between MST and PTSD symptoms, and of 0.24 with suicidal ideation in women, whereas the values were lower in men: 0.14 and 0.10, respectively.<sup>(37)</sup> The study by Shipherd and colleagues included longitudinal measures of PTSD in Marine officials: in the first measure the correlation between MST and PTSD was not significant regardless of sex, but in the second one the values were, respectively, 0.17 and 0.27 for women and men.<sup>(138)</sup> Two other studies evaluated correlations of military sexual harassment and depression; one evaluated only female veterans and found a correlation of 0.13 between military sexual harassment and depression, 0.10 between military sexual harassment and anxiety and 0.09 between sexual harassment and PTSD.<sup>(119)</sup> The other found correlations of 0.28 between sexual harassment and depression among women and 0.22 among men; for the correlation with PTSD the value increased for women and remained the same for men: 0.41 and 0.21 respectively.<sup>(96)</sup>

### 4.3 Gender wage gap

Three studies reported that women had lower salary than men. One of these studies considered income values per year and demonstrated that the average earnings for women in 1990 was \$12,312 lower than for men.<sup>(103)</sup> Another study controlled the results for years of education and evidenced that despite no differences in education women earned lower salaries than men.<sup>(140)</sup> Matching women and men according to indicators of individual productivity, including educational background, occupation category, marital status, number of children and other information, women earned 68% of the men's salary, while disregarding these indicators the ratio was 54%; these indicators explained only 25% of the gender wage gap.<sup>(78)</sup> Another study evaluated social status inconsistency (i.e. different income than expected according to educational level) and found that negative status inconsistency (lower salary than expected) was more common among women (34.5%) than in men (18.9%) and fewer women (7.5%) than men (16.4%) had positive status inconsistency (higher salary than expected).<sup>(139)</sup> Nevertheless, one study with women working in traditionally masculine industrial areas reported low levels of organizational sexism, a category that includes wage inequality, opportunities for career progression and gender discrimination.<sup>(133)</sup> In one study with women physicians, the salary was considered part of the exposure to discrimination, therefore it is not possible to access these results alone, but at least half of interviewees in the study reported exposure to gender prejudice.<sup>(100)</sup>

These studies suggest a relationship between lower income and depression. Still, Peter and colleagues did not find an influence of social inconsistency on depression neither for women nor for men<sup>(139)</sup> and Wege and colleagues did not find sex differences in the risk for depression according to salary and promotions; they demonstrated that employees with low salary and less promotion rewards had higher risk for depression regardless of sex.<sup>(140)</sup> Nevertheless, it is worth mentioning that this study did not focus on gender wage gap, but on salary *per se*; the one study which focused on salary difference showed that women matched for individual indices of productivity with men whose income was higher, had higher risk for depression and generalized anxiety, and the greater the wage gap, the higher was the odds ratio for depression and anxiety in these women.<sup>(78)</sup> Otherwise, in groups with similar income

or in which women have higher salary, no differences in the risk for depression are found.<sup>(78)</sup> One study disclosed that the salary has a higher impact on the well-being of women than of men, but did not test the salary difference itself; this study also revealed that the higher the percentage of women employed in the company, the lower the earnings for the workers – even for males.<sup>(103)</sup> Two other studies used salary as one parameter to compose a larger category indicating gender discrimination; in both studies these categories were positively related to mental health problems.<sup>(100,133)</sup>

#### **4.4 Career progression**

The results of opportunities for career progression were less homogeneous: two Australian studies reported low levels of organizational sexism, which was evaluated by career progression and gender discrimination<sup>(130)</sup>, plus wage inequality.<sup>(133)</sup> A German study did not find sex differences in the “job promotion and salary” evaluation of rewards of the Effort-Rewards Imbalance scale, despite men in this sample earning higher salaries.<sup>(140)</sup> However, one study using the global score of the same scale revealed that women had higher effort-reward imbalance than men.<sup>(139)</sup> One study with female doctors in the USA disclosed that at least half of the interviewees of all categories (PhD or MD, depressed or non-depressed) suffered gender prejudice, defined as discouragement or prohibition to pursue the career, although these results were not analyzed alone. The frequency of reporting being discouraged to pursue the career because of gender was higher among depressed compared to non-depressed female doctors.<sup>(100)</sup> Furthermore, in another study from the USA, women had less control over work than men and were less likely to be managers or supervisors.<sup>(103)</sup> In a cohort study, married workers with children younger than 6 years-old were assessed about work stress. Sex discrimination was defined as “Feeling that gender and being a mother were barriers to job promotions and opportunities for career development”. The following stress indices were also evaluated: choice/flexibility of work routine, decision power over their own work and authority/influence. However, the frequencies of exposure were not reported, only the relationship between stress and depression. Sex discrimination (0.12), decision power (0.19) and authority/influence (0.15) were positively correlated with depressive symptoms in the first sampling (T1), but only authority/influence was correlated with depression one year later (0.15, controlled by

T1 depressive symptoms and physical symptoms). Sex discrimination was a predictor of depression one year later.<sup>(135)</sup>

Overall, these studies suggest a relationship between difficulties in career progression and mental health impairments, although most of them did not assess the effect of career progression apart from other issues derived from work, such as job position. Both Australian studies that addressed organizational sexism reported correlations of 0.33 and 0.41 between this type of sexism and mental health problems.<sup>(130,133)</sup> One of the studies found that organizational sexism is a predictor of mental health problems.<sup>(130)</sup> However, increased risk for depression was similar between men and women in two studies that assessed effort-reward imbalance<sup>(139,140)</sup> and assessment of indicators of career progression, such as work autonomy, non-routine work, setting goals, supervising others and managerial level, did not reveal sex differences in their impact on psychological well-being.<sup>(103)</sup>

#### **4.5 Sex discrimination**

Four studies that sampled men and women demonstrated that women were more exposed to gender discrimination at work and in the study that sampled only women 72% suffered sex discrimination at work, without race differences.<sup>(106)</sup> One of them sampled Marine recruits<sup>(97)</sup>, another reported that sex discrimination occurs regardless of work class (high- or low skilled, white or blue collar workers)<sup>(123)</sup> and the last two studied doctors and revealed high exposure to sex prejudice<sup>(100)</sup>, being discrimination more common during training than during work (40% x 20% were victims, respectively), and less common in Medical areas with fewer men.<sup>(105)</sup> In addition, at least half of the interviewees of all categories (PhD or MD, depressed or non-depressed) were victims of gender prejudice.<sup>(100)</sup> However, there are other studies that report different results. For instance, one study with doctors described that sexual discrimination, although present, was not common, and not perceived as particularly stressful.<sup>(101)</sup> Similarly to the results found for exposure to sexual harassment in Richman and colleagues' study, male service and clerical workers were more exposed to sex discrimination, while among faculty workers the results were the opposite, and no sex differences were found for student workers; exposure to sex discrimination increased the risk for depression and anxiety in both women and men.<sup>(108)</sup> Two



Australian studies with industrial workers from traditionally male areas reported low organizational sexism, however, the correlations between organizational sexism and mental health problems in these studies were of 0.33 and 0.41.<sup>(130,133)</sup> Four other studies made correlations between some type of gender discrimination and well-being measures. One of them evaluated observed hostility towards women (correlation of -0.21 in women and -0.28 in men), observed hostility towards men (correlation of -0.20 in women and -0.26 in men) and organizational unresponsiveness to harassment (correlation of -0.12 in both women and men) in university employees.<sup>(111)</sup> One study defined sex discrimination as perception of suffering disadvantages regarding promotions or prospects for career development because of sex and being a working mother; sex discrimination was correlated with depressive symptoms in the first measure (0.28), but one year later had no effect, since the second analysis was controlled by T1 results and depressive symptoms in T1 was a significant predictor of depressive symptoms in T2.<sup>(135)</sup> The third evaluated female clerical workers, secretaries, and receptionists and found a correlation of 0.33 between sex discrimination and distress; when the results were controlled for negative affect, the correlation value decreased to 0.15. It is worth mentioning that although the study has not found differences in the exposure to sex discrimination, its association with distress was stronger for non-white women (0.18 versus 0.14). However, no effect of ethnicity on distress was found in the two-way ANOVA that showed that women who suffered SD at work had higher distress than women who had never been exposed.<sup>(106)</sup> The last study evaluated exposure of waitresses of Hooters-like restaurants to sexual objectification or harassment and used a questionnaire of interpersonal experiences of sexual objectification (ISOS) that is highly correlated to sexist discrimination, but did not evaluate sex discrimination itself; the correlation of ISOS results and depression in this study was 0.29.<sup>(124)</sup>

All of the three studies that evaluated female doctors suggest that gender discrimination at work increases depression<sup>(100,101)</sup> and suicide attempts<sup>(105)</sup>, even though the latter used only self-reports.<sup>(105)</sup> It is worth mentioning that sexual discrimination was labeled as uncommon and not particularly stressful in one study, but women who perceived discrimination as stressful were also more depressed.<sup>(101)</sup> Organizational sexism was a predictor of mental health problems in a female sample of mining workers.<sup>(130)</sup> Furthermore, in one study with Marine recruits, women and

those exposed to gender discrimination or race discrimination exhibited more depression, anxiety and mental health impairment, without statistically significant interaction between sex and gender discrimination.<sup>(97)</sup> Two studies evaluated sex discrimination at work along with other factors, so it was not possible to isolate the effect of sex discrimination on depression in these studies.<sup>(115,123)</sup>

**Table 5. Demographic information of the articles included in this review.**

<b>Author and year</b>	<b>Journal</b>	<b>Country*</b>	<b>Study type</b>	<b>Sample size</b>	<b>% of women</b>	<b>Work area</b>	<b>Sexual Harassment or Abuse</b>	<b>Military Sexual Trauma</b>	<b>Gender Wage Gap</b>	<b>Career Progression Obstacles</b>	<b>Sex Discrimination</b>
Welner et al., 1979 <sup>(100)</sup>	Archives of General Psychiatry	USA	Cross-sectional	250	100%	Physicians (MD and PhD)			x	x	x
Firth-Cozens, 1990 <sup>(101)</sup>	BMJ	United Kingdom	Cross-sectional	70	100%	Junior-doctors	x				x
Reifman et al., 1991 <sup>(135)</sup>	Psychology of Women Quarterly	USA	Cohort	200	100%	Faculty members or mid-level business managers (accounting, advertising, banking or law), married with children from 1 to 6 years old				x	x
Murdoch and Nichol, 1995 <sup>(102)</sup>	Archives of Family Medicine	USA	Cross-sectional	333	100%	Army, Navy, Marines, Air force and other veterans	x	x			
Ross and Mirowsky, 1996 <sup>(103)</sup>	Social Forces	USA	Cross-sectional	1286	57%	Not specified			x	x	
Fitzgerald et al., 1997 <sup>(104)</sup>	The Journal of Applied Psychology	USA	Cross-sectional	357	100%	Employees of a large, regulated West Coast utility	x				
Frank et al., 1998 <sup>(105)</sup>	Archives of Internal Medicine	USA	Cross-sectional	4357	100%	Physicians	x				x
Piotrkowski, 1998 <sup>(106)</sup>	Journal of Occupational	USA	Cross-sectional	385	100%	Clerical workers, Secretaries, and Receptionists					x

	Health Psychology							
Magley et al., 1999 <sup>(107)</sup>	Military Psychology	USA	Cross-sectional	28296	79.0%	Army, Navy, Marine Corps, Air Force, Coast Guard, and AGRITAR (Reserve personnel serving in full-time active-duty assignments)	x	x
Richman et al., 1999 <sup>(108)</sup>	American Journal of Public Health	USA	Cross-sectional	2492	53.6%	Occupational groups including faculty, graduate student workers and trainees (research and teaching assistants, medical residents, and postdoctoral fellows), clerical and secretarial workers, and service and maintenance workers	x	x
DeRoma et al., 2003 <sup>(109)</sup>	Military Medicine	USA	Cross-sectional	336	100%	War veterans	x	x
Richman et al., 2004 <sup>(136)</sup>	Women & Health	USA	Cohort	1730	55%	Faculty, graduate student and trainees, clerical and secretarial, service and	x	

						maintenance workers		
Vogt et al., 2005 <sup>(110)</sup>	Journal of Traumatic Stress	USA	Cross-sectional	317	26.2%	Veterans of the I Gulf War	x	x
Rospenda et al., 2006 <sup>(137)</sup>	Journal of Occupational Health Psychology	USA	Cohort	1730	55.1%	Mostly university workers (cohort)	x	
Miner-Rubino and Cortina, 2007 <sup>(111)</sup>	Journal of Applied Psychology	USA	Cross-sectional	1702	51.2%	University staff	x	x
Street et al., 2007 <sup>(112)</sup>	Journal of Consulting and Clinical Psychology	USA	Cross-sectional	3946	58.8%	Military reservists	x	x
Street et al., 2008 <sup>(113)</sup>	Journal of Rehabilitation Research and Development	USA	Cross-sectional	3946	58.8%	Army Reserve, Army National Guard, Naval Reserve, Marine Corps Reserve, Air Force Reserve, Air National Guard, and Coast Guard Reserve	x	x
DeSouza and Cerqueira, 2009 <sup>(114)</sup>	Journal of Interpersonal Violence	Brazil <sup>1</sup>	Cross-sectional	376	100%	Domestic workers	x	
Marsh et al., 2009 <sup>(115)</sup>	Journal of Occupational Health	Ethiopia <sup>1</sup>	Cross-sectional	387	100%	College and University staff	x	x
Shipherd et al., 2009 <sup>(138)</sup>	Journal of Traumatic Stress	USA	Cohort	317	71.3%	Marine personnel that reported MST in the previous 6 months	x	x

Kimerling et al., 2010 <sup>(116)</sup>	American Journal of Public Health	USA	Cross-sectional	125729	14.0%	Veterans of Operations Enduring Freedom and Operation Iraqi Freedom (OEF/OIF)	x	x
Dutra et al., 2011 <sup>(117)</sup>	Journal of Trauma & Dissociation	USA	Cross-sectional	54	100%	Army active duty personnel, post-deployment to Iraq	x	x
Kelly et al., 2011 <sup>(143)</sup>	Research in Nursing & Health	USA	Cross-sectional	135	100%	VA Medical Center Trauma Recovery Program: victims of MST compared to all women veterans	x	x
Weatherill et al., 2011 <sup>(119)</sup>	Sex Roles	USA	Cross-sectional	658	100%	Marine recruits after training	x	x
Maguen et al., 2012 <sup>(120)</sup>	Journal of Psychiatric Research	USA	Cross-sectional	7251	7.6%	Pre and post deployment evaluation of Afghanistan and Iraq war veterans	x	x
Foyne et al., 2013 <sup>(97)</sup>	Cultural Diversity & Ethnical Minority Psychology	USA	Cohort	1516	42.8%	Marine recruits		x
Gradus et al., 2013 <sup>(121)</sup>	Suicide & Life-Threatening Behavior	USA	Cross-sectional	2321	51.2%	Veterans of Operations Enduring Freedom and Operation Iraqi Freedom (OEF/OIF)	x	x
Pavao et al., 2013 <sup>(122)</sup>	Journal of General	USA	Cross-sectional	126598	7.0%	Veterans of Operations	x	x

	Internal Medicine					Enduring Freedom, Iraqi Freedom, and New Dawn (OEF/OIF/OND)			
Ardito et al., 2014 <sup>(123)</sup>	La Medicina Del Lavoro	European Union, Croatia, Macedonia, Montenegro, Hungary, Albania, Kosovo and Norway <sup>2</sup>	Cross-sectional	33907	45.6%	Not Specified			
							x		x
Szymanski and Feltman, 2014 <sup>(124)</sup>	Psychology of Women Quarterly	USA	Cross-sectional	253	100%	Waitresses of Hooters-like restaurants	x		x
Stahlman et al., 2015 <sup>(125)</sup>	Journal of Traumatic Stress	USA	Cross-sectional	7415	100%	Army, Navy, Marine Corps, Air Force, and Coast Guard active duty personnel	x	x	
Cohen et al., 2016 <sup>(126)</sup>	Women's Health Issues	USA	Cross-sectional	1024	10.3%	National Guard and Reserve soldiers	x	x	
Kearns et al., 2016 <sup>(127)</sup>	Translational Issues in Psychological Science	USA	Cross-sectional	673	100%	Veterans of Afghanistan and Iraq wars (Marine or Army)	x	x	
Meyer et al., 2016 <sup>(128)</sup>	Social Psychiatry and Psychiatric Epidemiology	Thailand	Cross-sectional	589	66.5%	Rural, Industrial and Sex workers	x		

Peter et al., 2016 <sup>(139)</sup>	Social Science & Medicine	Germany	Cohort (IidA-study)	3340	53.6%	Not Specified		x		x
Platt et al., 2016 <sup>(78)</sup>	Social Science & Medicine	USA	Cross-sectional	22581		Not specified		x		
Goldstein et al., 2017 <sup>(129)</sup>	Psychiatry Research	USA	Cross-sectional	383	100%	Military veterans	x		x	
Hom et al., 2017 <sup>(99)</sup>	Journal of Nervous and Mental Disease	USA	Cross-sectional	190	100%	Firefighters	x			
Rubin et al., 2017 <sup>(130)</sup>	Journal of Applied Social Psychology	Australia	Cross-sectional	263	100%	Mining workers	x			x
Smith et al., 2017 <sup>(96)</sup>	Clinical Psychological Science	USA	Cohort (variables of interest were only assessed in T1)	533	49.7%	Veterans of Afghanistan and Iraq wars	x		x	
Wege and Siegrist, 2018 <sup>(140)</sup>	International Archives of Occupational and Environmental Health	Germany	Cohort (GSOEP)	6693	49.3%	Not specified		x		x
Blais et al., 2019 <sup>(131)</sup>	Military Psychology	USA	Cross-sectional	656	100%	Military service members or veterans	x		x	
Gale et al., 2019 <sup>(132)</sup>	Frontiers Psychology	USA	Cross-sectional	4549	79.4%	Flight attendants	x			
Gross et al., 2019 <sup>(37)</sup>	Psychiatry Research	USA	Cross-sectional	850	41.6%	Pre-deployment measure of	x		x	



						Afghanistan and Iraqi veterans				
Rubin et al., 2019 <sup>(133)</sup>	Journal of Applied Social Psychology	Australia	Cross- sectional	190	100%	Industrial workers	x		x	x
Thurston et al., 2019 <sup>(81)</sup>	JAMA Internal Medicine	USA	Cross- sectional	304	100%	Not specified	x			
Yoo et al., 2019 <sup>(134)</sup>	American Journal of Industrial Medicine	South Korea	Cross- sectional	1346	18.8%	Medical Emergency workers	x			

\*Country of data collection. <sup>1</sup> – Article published by a North-American University; <sup>2</sup> – Article published by an Italian University. MST: Military Sexual Trauma; VA: Veteran Affairs.

**Table 6. Articles about sexism in the workplace, symptoms of depression and main comorbidities, sampled exclusively women (n = 22).**

<b>Citation</b>	<b>Type of sexism evaluated</b>	<b>Exposure Assessment</b>	<b>Depression/ Symptoms Assessment</b>	<b>Instruments for Assessment of Comorbidities</b>	<b>Main results - Exposure</b>	<b>Main results - Depression</b>	<b>Main results - Comorbidities</b>
Welner et al., 1979 <sup>(100)</sup>	Gender wage gap  Career progression Obstacles  Sex Discrimination	Self-report of a male coworker's salary being higher during training or strong discouragement/prohibition to pursue the career	Diagnostic interview	---	For all categories (MD or PhD, depressed or non-depressed) more than half suffered prejudice. Results of salary and career obstacles were not reported alone	More depressed physicians suffered prejudice throughout their career (p = 0.02). Results of salary and career obstacles were not reported alone	-
Firth-Cozens, 1990 <sup>(101)</sup>	Sexual Harassment or Sexual Abuse	Sources of stress (women) questionnaire	Symptom Checklist 90 (SCL-90), depression scale	Sources of Stress Questionnaire	Sexual harassment (SH) did not occur frequently	Correlation of 0.25 (p < 0.05) between SH and depression	SH caused the second highest level of strain
	Sex Discrimination	Sources of stress (women) questionnaire	SCL-90, depression scale	Sources of Stress Questionnaire	Prejudice from patients occurred frequently, but sex discrimination (SD) and stereotyping did not	Correlation of 0.46 between prejudice from patients and depression (p < 0.001). Correlation of 0.37 between SD by senior doctors and depression (p < 0.01). Correlation of 0.33 between sexual stereotyping and depression (p < 0.01)	Prejudice from patients caused the third highest level of strain, but SD from senior doctors and sexual stereotyping were not seen as particularly stressful
Reifman et al., 1991 <sup>(135)</sup>	Career progression Obstacles	Choice/Flexibility, Decision Power and Authority/	Symptom Checklist 90 (SCL-90),	---	The frequencies of exposure were not reported	Choice/Flexibility had no effect on depressive symptoms. Decision power (p <	-

		Influence were evaluated as stress indices	depression subscale			0.05) and Authority/Influence ( $p < 0.01$ ) increased depressive symptoms in T1, but only Authority/Influence also increased depressive symptoms one year later (controlled by T1 depressive symptoms and physical symptoms) ( $p < 0.05$ )	
	Sex Discrimination	SD was defined as "perception of gender or motherhood status were barriers to promotions"	SCL-90, depression subscale	---	The frequency of exposure to SD was not reported	Workplace SD increased depressive symptoms in T1 ( $p < 0.001$ ), but had no effect on depressive symptoms one year later (controlled by T1 depressive symptoms and physical symptoms)	
Murdoch and Nichol, 1995 <sup>(102)</sup>	Sexual Harassment or Sexual Abuse	Sexual Harassment Inventory (SHI)	History of anxiety or depression	Charlson Comorbidity Index	25% of veterans under 50 years reported SH from coworkers or superiors, while for veterans older than 50 this value was 8%	More veterans with history of SH also had history of anxiety or depression regardless of age ( $ps < 0.05$ )	No effect of SH on comorbidities
	Military Sexual Trauma						

Fitzgerald et al., 1997 <sup>(104)</sup>	Sexual Harassment or Sexual Abuse	Sexual Experiences Questionnaire - Revised (SEQ-R) + Organizational Tolerance for Sexual Harassment Inventory (OTSHI) + Job gender context (gendered nature of the workgroup) was assessed by three items from the U.S. Merit Systems Protection Board	Mental Health Index (MHI)	---	Organizational tolerance to SH increased SH (B = 0.44). Job gender context decreased SH (B = -0.21). Women in male-dominated work environments had higher risk to suffer SH	SH increased distress (B = 0.20). SH was not related to physical health conditions, although it impaired physical health due to its impact on psychological health	-
Frank et al., 1998 <sup>(105)</sup>	Sexual Harassment or Sexual Abuse	One question based on the American Medical Association definition of harassment	History of depression	Suicide attempts	29.8% suffered SH during training and 11.4%, in medical practice	Victims of SH had more history of depression (p < 0.001)	Victims of SH had more history of suicide attempts (p < 0.001)
	Sex Discrimination	Gender-based harassment self-report	History of depression	Suicide attempts	40.2 suffered SD in training and 20.5% in practice. SD was less common in areas with less men (p < 0.01)	Victims of SD had more history of depression (0.001)	Victims of SD had more history of suicide attempts (0.01)

Piotrkowski, 1998 <sup>(106)</sup>	Sex Discrimination	One question	CES-D (result called of 'distress' by the authors)	---	72% of women suffered SD at work. No difference was found between white and non-white women	Correlation of 0.33 ( $p < 0.001$ ) between SD and distress. Controlling for negative affect, the correlation value was 0.15 ( $p < 0.01$ ). This association was stronger for non-white women (0.18, $p < 0.01$ versus 0.14, $p < 0.05$ ). No effect of ethnicity on distress was found in the two-way ANOVA; women who had never suffered SD at work had less distress ( $M = -1.15$ , $DP = 3.81$ ) than women who had suffered ( $M = 0.43$ , $SD = 3.87$ to $M = 1.28$ , $SD = 5.36$ )	-
DeRoma et al., 2003 <sup>(109)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	6 questions about sexual harassment or abuse in civil, military and childhood contexts	CES-D	Anxiety: State-Trait Anxiety Index (STAI)	Lifetime: 74.6% suffered SH and 38% sexual abuse (SA) Only in the Army: 15% suffered SH and 9.3% suffered SA Civilian and Military: 49.1% suffered SH and 9.3% suffered SA	No effect of SH (in any context) on depression. Civilian or a combination of civilian and military SA increased depression ( $p < 0.001$ )	No effect of SH (in any context) on anxiety. Civilian or a combination of civilian and military SA increased anxiety ( $p < 0.001$ )

DeSouza and Cerqueira, 2009 <sup>(114)</sup>	Sexual Harassment or Sexual Abuse	Sexual Experiences Questionnaire (SEQ)	<i>Depression and anxiety: MHI</i>		26% reported some type of SH in the previous 12 months; 54% of them suffered more than one type of SH and 17% suffered all four types of SH evaluated*	Victims of SH were more likely to have depression and anxiety ( $p < 0.05$ )	
Marsh et al., 2009 <sup>(115)</sup>	Sexual Harassment or Sexual Abuse	5-item questionnaire	Patient Health Questionnaire-9 (PHQ-9)	---	46.8% reported exposure to at least one type of SH at work	Higher proportion of depressed women among those who suffered SH ( $p = 0.001$ )	-
	Sex Discrimination	One item in the 5-item questionnaire of sexual harassment (felt mistreated at work because of gender)	PHQ-9	---	19.4% felt mistreated at work because of gender	Did not report results of "felt mistreated at work because of gender" separately	
Dutra et al., 2011 <sup>(117)</sup>	Sexual Harassment or Sexual Abuse Military Sexual Trauma	Deployment Risk and Resilience Inventory (DRRI)	CES-D	<i>PTSD symptoms: Primary Care PTSD (PC-PTSD)</i>	57.4% were exposed to at least one type of military SH	No effect of military SH on depression	SH increased the risk for PTSD ( $\beta = 0.39$ , $p < 0.05$ )
Kelly et al., 2011 <sup>(143)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	Veterans Affairs Military Stress Treatment Assessment (VAMSTA)	PHQ-9	<i>PTSD symptoms: PTSD Checklist (PCL)</i> <i>Suicidal thoughts: PHQ-9</i> <i>Sleep quality:</i>	81.3% were victims of military sexual trauma (MST)	No effect of MST on depression	No effect of MST on PTSD, suicidal ideation or sleep quality

				Pittsburgh Sleep Quality Index (PSQI)			
Weatherill et al., 2011 <sup>(119)</sup>	Sexual Harassment or Sexual Abuse Military Sexual Trauma	Sexual Experiences Questionnaire - Department of Defense version (SEQ-DoD)	CES-D	<i>Anxiety</i> : Beck Anxiety Inventory (BAI) <i>PTSD</i> <i>symptoms</i> : PCL	24% were victims of SH	Correlation of 0.13 between SH and depression ( $p < 0.01$ )	Correlation of 0.10 between SH and anxiety ( $p < 0.05$ ) and of 0.09 between SH and PTSD ( $p < 0.05$ )
Szymanski and Feltman, 2014 <sup>(124)</sup>	Sexual Harassment or Sexual Abuse	Sexually Objectifying Environment Scale - Restaurant Version (SOES- RV) Interpersonal Sexual Objectification Scale (ISOS) Male Gaze subscale (objectification, sexism, sexual harassment, and sexual assault)	CES-D	---	Did not report frequency of exposure to SH, focuses on workplace rather than individual experiences	Correlation of 0.19 between SOES-RV and depression ( $p < 0.05$ ), correlation of 0.29 between ISOS and depression ( $p < 0.05$ ), correlation of 0.16 between Male Gaze and depression ( $p < 0.05$ )	-
	Sex Discrimination	Interpersonal experiences of sexual objectification (ISOS) – high correlation with sexist discrimination	CES-D	---	Did not report frequency of exposure to SD, focuses on workplace rather than individual experiences	Correlation of 0.29 between ISOS and depression ( $p < 0.05$ )	-

Stahlman et al., 2015 <sup>(125)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	One question	Diagnostic questions	<i>Anxiety</i> : PHQ adapted <i>PTSD symptoms</i> : PTSD Checklist - Civilian Version (PCL-C) <i>Psychological distress</i> : K-6 <i>Suicide ideation or attempts since joining the military</i> : self-report	13.4% reported unwanted sexual contact (MST) since entering the military	Depressed veterans were more likely to report victimization by MST ( $p < 0.01$ )	Veterans with anxiety ( $p < 0.05$ ), PTSD ( $p < 0.01$ ), psychological distress ( $p < 0.01$ ), suicidal ideation ( $p < 0.01$ ) and suicide attempts since entering the Army ( $p < 0.01$ ) were more likely to be victims of MST
Kearns et al., 2016 <sup>(127)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	DRRI-2 and Sexual Harassment Scale (SHS)	<i>Major depressive disorder (MDD) diagnostic status</i> : Structured Clinical Interview for DSM-5 via telephone <i>MDD symptoms</i> : 9 <sup>th</sup> item of PHQ-9	<i>PTSD diagnostic status</i> : Structured Clinical Interview for DSM-5 via telephone <i>PTSD symptoms</i> : PTSD Checklist for DSM-5 (PCL-5)	45.7% suffered military SA	SA increased MDD diagnosis ( $p < 0.01$ ) and depressive symptoms ( $p < 0.05$ )	SA was not a predictor of PTSD diagnosis or symptoms
Goldstein et al., 2017 <sup>(129)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	Two questions: one to assess sexual harassment exposure and other about sexual assault	PHQ-9	<i>PTSD symptoms</i> : PCL-5	65% suffered SH in the Army and 33.2% suffered SA	Victims of SH ( $p = 0.02$ ) or SA ( $p = 0.002$ ) had higher depression	Victims of SH ( $p = 0.003$ ) or SA ( $p < 0.001$ ) had higher PTSD symptoms



Hom et al., 2017 <sup>(99)</sup>	Sexual Harassment or Sexual Abuse	Two questions of the Quality of Worklife Module (QWM) adapted to identify SH while working as a firefighter	CES-D	<i>Anxiety:</i> Anxiety Sensitivity Index-3 (ASI-3) <i>Insomnia:</i> Insomnia Severity Index (ISI) <i>PTSD symptoms:</i> PCL-5 <i>Suicidal ideation:</i> Suicidal Behaviors Questionnaire-Revised (SBQ-R)	21.7% reported SH in service	Victims of SH had more depressive symptoms ( $p = 0.001$ , $\eta^2 = 0.042$ )	Victims of SH had higher anxiety ( $p < 0.001$ , $\eta^2 = 0.065$ ), insomnia ( $p = 0.001$ , $\eta^2 = 0.037$ ) PTSD symptoms ( $p < 0.001$ , $\eta^2 = 0.096$ ) and suicide risk ( $p = 0.001$ , $\eta^2 = 0.036$ )
Rubin et al., 2017 <sup>(130)</sup>	Sexual Harassment or Sexual Abuse	22-item questionnaire	Depression and Anxiety: Depression Anxiety Stress Scale (DASS)		Low levels of interpersonal sexism (evaluation of SH)	SH was a predictor of mental health problems (anxiety and depression) ( $\beta = 0.21$ , $p < 0.001$ ). Correlation of 0.32 between SH and mental health problems ( $p < 0.001$ )	
	Career Progression Obstacles Sex Discrimination				Low levels of organizational sexism (career progression and gender discrimination)	Organizational sexism was a predictor of mental health problems ( $\beta = 0.23$ , $p < 0.001$ ). Correlation of 0.33 between organizational sexism and mental health problems ( $p < 0.01$ ).	
Blais et al., 2019 <sup>(131)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	Veteran Affairs MST screening questionnaire, a checklist for SH and one question for SA	PHQ-8	<i>PTSD symptoms:</i> PCL-5 <i>Suicidal ideation:</i> 9 <sup>th</sup> item of PHQ-9	82.5% suffered some type of MST. 58.3% suffered SH and 41.8% suffered SA; 95.2% from those who suffered SA also suffered SH	SH increased depressive symptoms ( $p \leq 0.05$ ), but not probable diagnosis. SA increased depressive symptoms and probable diagnosis ( $ps \leq 0.05$ )	SH increased PTSD symptoms and diagnosis ( $ps \leq 0.05$ ), but had no effect on suicidal ideation. SA increased PTSD symptoms, PTSD

							diagnosis and suicidal ideation (ps ≤ 0.05)
Rubin et al., 2019 <sup>(133)</sup>	Sexual Harassment or Sexual Abuse	6-item questionnaire	<i>Depression and anxiety: DASS</i>		Low levels of interpersonal sexism (evaluation of SH)	Correlation of 0.37 between SH and mental health problems (anxiety and depression) (p < 0.01)	
	Gender wage gap Career progression Obstacles Sex Discrimination				Low levels of organizational sexism (career progression, wage gap and gender discrimination)	Correlation of 0.41 between organizational sexism and mental health problems (p < 0.01)	
Thurston et al., 2019 <sup>(81)</sup>	Sexual Harassment or Sexual Abuse	Brief Trauma Questionnaire	CES-D	<i>Anxiety: STAI</i> <i>Sleep quality: PSQI</i>	19% of women reported SH	No effect of SH on depression, statistical tendency ( $\beta = 2.27$ , p = 0.06)	No effect of SH on anxiety. SH induced sleep alterations compatible with insomnia (OR = 1.89, p = 0.03)

\* Sexist hostility, sexual hostility, unwanted sexual attention and sexual coercion; p = statistical significance (alpha level);  $\beta$  = effect size;  $\eta^2$  = effect size. SH: Sexual Harassment; SCL-90: Symptom Checklist 90; SD: Sex Discrimination; SHI: Sexual Harassment Inventory; SEQ-R: Sexual Experiences Questionnaire - Revised; OTSHI: Organizational Tolerance for Sexual Harassment Inventory; CES-D: Center for Epidemiologic Studies – Depression; STAI: State-Trait Anxiety Index; SA: Sexual Abuse; BAI: Beck Anxiety Inventory; PTSD: Post-Traumatic Stress Disorder; SEQ: Sexual Experiences Questionnaire; PCL: PTSD Checklist; SEQ-DoD: Sexual Experiences Questionnaire - Department of Defense version; MHI: Mental Health Index; PHQ: Patient Health Questionnaire; MST: Military Sexual Trauma; DRR: Deployment Risk and Resilience Inventory; PC-PTSD: Primary Care PTSD; VAMSTA: Veterans Affairs Military Stress Treatment Assessment; PSQI: Pittsburgh Sleep Quality Index; SOES-RV: Sexually Objectifying Environment Scale - Restaurant Version; ISOS: Interpersonal Sexual Objectification Scale; PCL-C: PTSD Checklist - Civilian Version; SHS: Sexual Harassment Scale; MDD: Major Depressive Disorder; PCL-5: PTSD Checklist for DSM-5; QWM: Quality of Worklife Module; ASI-3: Anxiety Sensitivity Index-3; ISI: Insomnia Severity Index; SBQ-R: Suicidal Behaviors Questionnaire-Revised; DASS: Depression Anxiety Stress Scale.

Table 7. Articles about sexism in the workplace, symptoms of depression and main comorbidities in samples including women and men (n = 25).

Citation	Type of sexism evaluated	Exposure Assessment	Depression/ Symptoms Assessment	Instruments for Assessment of Comorbidities	Main results - Exposure	Main results - Depression	Main results - Comorbidities
Ross and Mirowsky, 1996 <sup>(103)</sup>	Gender wage gap	Salary self-report	<i>Well-being:</i> Center for Epidemiologic Studies - Depression (CES-D) modified	---	Average women's annual salary was \$12 312 lower than men's (p < 0.5)	Salary increased women's well-being more than men's (p = 0.003)	-
	Career progression Obstacles	Questions about control over work process (work autonomy, nonroutine work, and setting goals) and control over others/authority (to be managers or supervisors)		---	Women had less control over work process (ps < 0.05) and less control over others (ps < 0.05)	Autonomy, nonroutine work, supervising others and managing others had no effect on well-being. Setting goals increased well-being. No sex differences were found in these effects	-
Magley et al., 1999 <sup>(107)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	Questions of Sexual Experiences Questionnaire - Department of Defense version (SEQ-DoD)	Five items of Mental Health Index (MHI)	---	Women were more exposed to sexual harassment (SH) - in each subscale and total score. Both women and men were more harassed by men, and the types of male-male harassment were different from other target-offender combinations	Women: SH reduced well-being. This was the most affected parameter, but SH also impacted health and work. Men: SH decreased well-being and health	-

Richman et al., 1999 <sup>(108)</sup>	Sexual Harassment or Sexual Abuse	SEQ modified, subscales	CES-D	<i>Anxiety</i> : 9-item tension-anxiety factor of the Profile of Mood States	In two work classes men were more exposed to overall SH (service workers: 45% of men and 27.2% of women, $p < 0.01$ ; clerical workers: 46% of men and 30.7% of women, $p < 0.01$ ). Among faculty workers, women were more exposed to overall SH (28.8% of men and 40.4% of women, $p < 0.01$ ). No differences were found for unwanted sexual attention, sexual coercion and SA in any work class. No sex differences were found for student workers	Women: overall SH (OR = 1.56, $p < 0.001$ ), unwanted sexual attention (OR = 1.13, $p < 0.01$ ) and sexual coercion (OR = 2.84, $p < 0.01$ ) increased the risk for depression Men: only overall SH (OR = 0.77, $p < 0.01$ ) increased the risk for depression.	Women: overall SH (OR = 2.00, $p < 0.001$ ), unwanted attention (OR = 1.55, $p < 0.05$ ) and sexual coercion (OR = 3.21, $p < 0.05$ ) increased the risk for anxiety. Men: only overall SH (OR = 1.11, $p < 0.05$ ) increased the risk for anxiety
---------------------------------------	-----------------------------------	-------------------------	-------	--	--	--	---

	Sex Discrimination				Men were more exposed to SD in two work classes (service workers: 46.6% of men and 28.9% of women, $p < 0.01$ ; clerical workers: 41.6% of men and 28.6% of women, $p < 0.01$ ). Among faculty workers, women were more exposed to SD (26.2% of men and 39.5% of women, $p < 0.001$ ). No sex differences were found for student workers	SD increased the risk for depression (Women: OR = 1.47, $p < 0.001$ and Men: OR = 0.85, $p < 0.01$ )	SD increased the risk for anxiety (Women: OR = 1.78, $p < 0.001$ and Men: OR = 1.27, $p < 0.01$ )
Richman et al., 2004 <sup>(136)</sup>	Sexual Harassment or Sexual Abuse	Sexual Experiences Questionnaire (SEQ) + Organizational Tolerance for Sexual Harassment Inventory (OTSHI)	Seven items of CES-D	<i>Anxiety</i> : 9-item tension-anxiety factor of the Profile of Mood States	Decrease in tolerance to SH from wave 2 to wave 3 ( $p < 0.001$ ). Tendency to decrease in women's exposure to SH from wave 2 to wave 3 ( $p < 0.1$ ), for men, no difference was found	Wave 2: SH increased depression in women ( $B = 0.96$ , $p < 0.01$ ) and men ( $B = 1.31$ , $p < 0.01$ ). Wave 3: SH increased depression in women ( $B = 2.05$ , $p < 0.05$ ), but not in men	SH increased anxiety in women in both wave 2 ( $B = 1.55$ , $p < 0.01$ ) and wave 3 ( $B = 3.43$ , $p < 0.05$ ), but no effect was found for men

Vogt et al., 2005 <sup>(110)</sup>	Sexual Harassment or Sexual Abuse	7-item questionnaire	Beck Depression Inventory (BDI) adapted	<i>Anxiety</i> : Beck Anxiety Inventory (BAI) adapted <i>Post-traumatic stress disorder (PTSD)</i> : Military version of PTSD Checklist (PCL-M)	Women were more exposed to SH (p < 0.05)	No effect of SH on depression in the whole sample. Interaction of SH with gender (p < 0.01): men had higher association between SH and depression (p < 0.01)	No effect of SH on anxiety in the whole sample. Interaction of SH with gender (p < 0.01): men had higher association between SH and anxiety (p < 0.01) SH increased PTSD risk in the whole sample (p < 0.05), with higher effect on men (p < 0.01)
	Military Sexual Trauma						
Rospenda et al., 2006 <sup>(137)</sup>	Sexual Harassment or Sexual Abuse	Sexual Experiences Questionnaire (SEQ)	7 items of CES-D	9-item tension-anxiety factor of the Profile of Mood States	SH pattern was not associated with gender. Did not report frequency of exposure	SH was not correlated with depression regardless of sex	SH was not correlated with anxiety regardless of sex
Miner-Rubino and Cortina, 2007 <sup>(111)</sup>	Sexual Harassment or Sexual Abuse  Sex Discrimination	Observed incivility (OI) toward women/men: Items based on the Workplace Incivility Scale (WIS) Observed SH: 3 items adapted from SEQ 9 questions about perceived organizational	<i>Depression and anxiety</i> : Brief Symptom Inventory (BSI) subscales		Did not report frequency of exposure	Women: correlation of - 0.21 between OI to women (incivility and SH) and psychological well-being (anxiety and depression), correlation of -0.20 (p < 0.01) between OI to men and well-being, and correlation of - 0.12 between institutional unresponsiveness to SH and psychological well-being. Men: correlation of - 0.28 between OI to women and psychological well-being, correlation of -0.26 (p < 0.01) between OI to men and well-being, and correlation of - 0.12 between institutional unresponsiveness to SH and psychological well-being	

		unresponsiveness to SH					
Street et al., 2007 <sup>(112)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	SEQ-DoD	CES-D	<i>PTSD symptoms:</i> PTSD Checklist (PCL) <i>Mental Health:</i> Short Form – 12 Health Survey (SF-12), 6-item Mental Health Composite	More women than men were exposed to SH ( $p < 0.001$ ), and in higher frequency ( $p < 0.01$ , Cohen's $d = 0.79$ ). Female reservists had increased odds of experiencing any SH (aOR = 5.5, $p < 0.05$ )	SH increased depression ( $\beta = 0.41$ , $p < 0.001$ ) in the whole sample, but men had higher depression scores at higher levels of SH ( $p < 0.05$ )	SH increased PTSD ( $\beta = 0.75$ , $p < 0.001$ ) in the whole sample, with no interaction with gender. SH impaired mental health ( $\beta = -0.40$ , $p < 0.001$ ) in the whole sample, but men had worse mental health at higher levels of SH ( $p < 0.05$ )
Street et al., 2008 <sup>(113)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	SEQ-DoD	CES-D	<i>PTSD symptoms:</i> PCL	60% of women (95%CI: 58.0 - 62.0) and 27.2% of men (95%CI: 25.0 - 29.4) suffered SH. 13.1% of women (95%CI: 11.7-14.4) and 1.6% of men (95%CI: 1.0-2.2) were victims of SA	Women: SH increased the risk for depression (aOR = 1.75; 95%CI: 1.37 - 2.24), SH and sexual assault (SA) combined increased the risk for depression (aOR = 4.51; 95%CI: 3.30–6.16). Men: SH increased the risk for depression (aOR = 2.21; 95%CI: 1.63–2.99), SH and SA combined increased the risk for depression (aOR =	Women: SH and SA combined were associated with greater risk for current PTSD (aOR = 7.15, 95% CI = 4.03–12.69) and lifetime PTSD (aOR = 7.03, 95% CI = 5.05–9.79) comparing to SH alone. Men: results not shown

						5.38; 95%CI: 2.21–13.06).	
Shipherd et al., 2009 <sup>(138)</sup>	Sexual Harassment or Sexual Abuse	SEQ-DoD	CES-D	<i>PTSD symptoms</i> : PCL	Since it was a study about military sexual trauma (MST) victims, 100% of the sample was exposed	Women: correlation of 0.15 between MST and depression in T2 ( $p < 0.05$ ) Men: correlation between MST and depression in T2 was not statistically significant	Correlation between MST and PTSD in T1 was not statistically significant for both women and men. In T2 the correlation between MST and PTSD was 0.17 ( $p < 0.01$ ) for women and 0.27 ( $p < 0.01$ ) for men
	Military Sexual Trauma						
Kimerling et al., 2010 <sup>(116)</sup>	Sexual Harassment or Sexual Abuse	Medical records	Data extracted from medical records and coded according to the ICD-9	<i>Anxiety and PTSD</i> : data extracted from medical records and coded according to the ICD-9	15.1% of women and 0.7% of men were victims of MST	Women (aOR = 2.64; CI: 2.41-2.88) and men (aOR = 2.32, CI: 1.99-2.70) who were victims of MST had higher risk for depressive disorders	Women and men who were victims of MST had higher risk for PTSD (women: aOR = 3.83, 95%CI: 3.49-4.21; men: aOR = 2.53, 95%CI: 2.16-2.97) and anxiety (women: aOR = 1.80, 95%CI: 1.64-1.99; men: aOR = 1.98, 95%CI: 1.68-2.34)
	Military Sexual Trauma						
Maguen et al., 2012 <sup>(120)</sup>	Sexual Harassment or Sexual Abuse Military Sexual Trauma	Two questions during health evaluation	PHQ-9	<i>PTSD symptoms</i> : PC-PTSD	Women (12%) were more exposed to MST than men (1%, $p < 0.001$ )	MST increased risk for depression ( $p < 0.005$ ) without sex differences	MST increased risk for PTSD ( $p < 0.05$ ) without sex differences
Foyne et al., 2013 <sup>(97)</sup>	Sex Discrimination	Workplace Discrimination Inventory (WPDI) modified	CES-D	<i>Anxiety</i> : BAI <i>Mental health</i> : SF-12 Medical Outcomes	Women suffered more sex discrimination (SD) than men ( $p < 0.01$ )	Women ( $\beta = -3.52$ , $p < 0.01$ ) and people exposed to SD ( $\beta = 0.16$ , $p < 0.05$ ) or racial	Women ( $\beta = 1.24$ , $p < 0.01$ ) and people exposed to SD ( $\beta = -0.11$ , $p < 0.05$ ) or RD ( $\beta = -0.29$ , $p < 0.05$ )



						discrimination (RD) ( $\beta = 0.29$ , $p < 0.01$ ) had more depression, but no interaction between gender and SD was found	had worse mental health, but no interaction between gender and SD was found. Women ( $\beta = -2.30$ , $p < 0.01$ ) and people exposed to SD ( $\beta = 0.20$ , $p < 0.01$ ) or RD ( $\beta = 0.17$ , $p < 0.01$ ) had more anxiety. Women endorsing high SD had the highest levels of anxiety ( $\beta = 0.25$ , $p < 0.05$ )
Gradus et al., 2013 <sup>(121)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	Deployment DRI, subscale The Sexual Harassment Scale	CES-D	<i>PTSD symptoms</i> : PCL-M <i>Suicidal ideation</i> : One question adapted from Suicidal Behaviors Questionnaire Short Form (SBQ-SF)	Women were more exposed to SH than men ( $p < 0.05$ )	SH increased depressive symptoms in women ( $B = 0.38$ , $p < 0.001$ ) and men ( $B = 0.12$ , $p < 0.001$ )	SH increased PTSD symptoms in women ( $B = 0.39$ , $p < 0.001$ ) and men ( $B = 0.09$ , $p < 0.001$ ). In women, SH increased suicidal ideation ( $B = 0.087$ , $p < 0.05$ ) – with mediation of 56.2% from depressive symptoms, but no mediation of PTSD symptoms. In men, SH did not increase suicidal ideation directly, but this effect appeared with mediation of depressive (88.6%, $B = 0.06$ , $p < 0.001$ ) and

							PTSD symptoms (B = 0.04, $p < 0.001$ )
Pavao et al., 2013 <sup>(122)</sup>	Sexual Harassment or Sexual Abuse	Two Questions	Diagnostic interview based on ICD-9	<i>Anxiety, PTSD, Suicide and intentional self-inflicted injury: Diagnostic interview based on ICD-9</i>	Women (39.7%) suffered more MST than men (3.3%, $p < 0.001$ )	Homeless veterans who suffered MST had higher risk for depression than those who did not (Women: aOR = 1.78; 95%CI: 1.62–1.95 and Men: aOR = 1.95; 95%CI: 1.82–2.09)	Victims of MST had higher risk for anxiety (Women: aOR = 1.42; 95%CI: 1.29–1.55 and Men: aOR = 1.57; 95%CI: 1.46–1.69), PTSD (Women: aOR = 6.24; 95%CI: 5.68–6.86 and Men: aOR = 3.80; 95%CI: 3.56–4.06) and suicide and intentional self-inflicted injury (Women: aOR = 1.64; 95%CI: 1.37–1.95 and Men: aOR = 1.73; 95%CI: 1.56–1.92) compared to non-victims.
	Military Sexual Trauma						
Ardito et al., 2014 <sup>(123)</sup>	Sexual Harassment or Sexual Abuse	One question	WHO-5 Well-being Index	---	Women were more exposed to SH than men ( $p < 0.001$ )	No effect of SH in the workplace on depressive symptoms	-
	Sex Discrimination	<i>Discrimination (including sexual): 7 questions</i>	WHO-5 Well-being Index	---	Women were more exposed to SD than men ( $p < 0.01$ )	SD was positively associated with depressive symptoms ( $p < 0.001$ ) for both women and men	-
Cohen et al., 2016 <sup>(126)</sup>	Sexual Harassment or Sexual Abuse	25 items of the Life Events Checklist	PHQ-9	<i>PTSD symptoms: PCL</i>	Women were more likely to suffer sexual trauma than men ( $p$	None of the depressed men ( $n = 114$ , 13.7% of the	None of the men with PTSD ( $n = 58$ , 7.5% of the sample) and

	Military Sexual Trauma	asked in the context of deployment + 3 items of Deployment Risk and Resilience Inventory (DRRI)			= 0.02). In this sample, 6.6% of women and no man were victims.	sample) and women (n = 15, 12.2% of the sample) had suffered sexual trauma.	only one woman (n = 11, 8.5% of the sample) had suffered sexual trauma
Meyer et al., 2016 <sup>(128)</sup>	Sexual Harassment or Sexual Abuse	Factor analysis from 18 questions, generating the factors sexual harassment and abuse; coercive working conditions; daily hassles and stressors; and barriers to exit	Mental Health Assessment Project (MHAP) – depression scale	<i>Anxiety</i> : MHAP – anxiety scale	Men's exposure to SH or SA was $0.3 \pm 0.03$ and women's was $1.6 \pm 0.15$ (mean $\pm$ standard deviation, score from 0 to 3)	SH or SA in the workplace increased symptoms of depression in men ( $\beta = 2.4$ , $p = .024$ ), but not in women	SH or SA in the workplace increased anxiety symptoms in both men ( $\beta = 2.4$ , $p = .009$ ) and women ( $\beta = .9$ , $p = .004$ )
Peter et al., 2016 <sup>(139)</sup>	Gender wage gap	Social status inconsistency (SSI) evaluation: reason between one's income and the expected income according to educational level	BDI-V	---	Negative SSI (lower income than expected) was more common among women (34.5%) than men (18.9%, $p < 0.001$ ). Fewer women (7.5%) had positive SSI (higher income than expected) comparing	No effect of social status consistency or inconsistency on depression for both women and men.	-

					to men (16.4%, $p < 0.001$ )	
	Career Progression Obstacles	Effort-Reward Imbalance Questionnaire (ERI)	BDI-V	---	Women had higher ERI than men ( $p < 0.001$ )	Baseline ERI increased depressive symptoms for both women and men at follow-up ( $p < 0.05$ ). Correlation between baseline ERI and depression at follow-up: men = 0.294 ( $p < 0.001$ ); women = 0.268 ( $p < 0.001$ )
Platt et al., 2016 <sup>(78)</sup>	Gender wage gap	Self-report of salary	<i>MDD and Generalized Anxiety Disorder (GAD)</i> : Structured diagnostic interview based on DSM-V (Alcohol Use Disorder and Associated Disabilities Interview Schedule)	Women and men were matched, if possible, by individual productivity factors (IPF – i.e., educational background, occupation category). Salary of matched women was 68% of that of men's. Unmatched women's salary was 54% of men's; these IPF	In pairs without salary difference or in which women had higher salary there was no difference in MDD. In pairs in which women had lower salary, they had higher risk for past-year MDD (OR = 2.43, $p < 0.001$ )	Women had higher risk for GAD. In pairs without salary difference or in which women had higher salary the odds ratio was 1.5 ( $p < 0.001$ ), while in pairs in which men's salary was higher the odds ratio was 4.1 ( $p < 0.001$ )

					explained 25% of the wage gap		
Smith et al., 2017 <sup>(96)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	SHS	BDI – Primary Care	<i>PTSD symptoms:</i> PCL–M	Women were more exposed to SH than men ( $p < 0.05$ , Cohen's $d = 0.51$ )	Correlation of 0.28 between SH and depression for women ( $p < 0.05$ ) and 0.22 for men ( $< 0.05$ )	Correlation of 0.41 among SH and PTSD for women ( $p < 0.05$ ) and 0.25 for men ( $p < 0.05$ )
Wege and Siegrist, 2018 <sup>(140)</sup>	Gender wage gap	ERI	Self-report of being diagnosed by a physician	---	Men had higher salary ( $p < 0.001$ ), without differences in years of education ( $p = 0.6$ )	Increased risk for depression in workers with low salary and promotions ( $ps < 0.01$ ) regardless of sex ( $p = 0.8$ )	-
	Career progression Obstacles	ERI	Self-report of being diagnosed by a physician	---	No differences between women and men in the “job promotion and salary” subscale of ERI	Increased risk for depression in workers with low salary and promotions ( $ps < 0.01$ ) regardless of sex ( $p = 0.8$ )	-
Gale et al., 2019 <sup>(132)</sup>	Sexual Harassment or Sexual Abuse	Three questions	PHQ-9	<i>Sleep problems and fatigue:</i> questions regarding symptoms in the previous weeks	26.4% of the sample suffered SH at work in the previous year. 2.1% suffered SA. Results of exposure for each sex are not shown. For both SH and SA, the offender was more commonly a flight passenger (68% SH and 48.9% SA)	SH increased depression in both women (OR = 1.91, 95%CI: 1.52 - 2.30) and men (OR = 3.03, 95%CI: 2.03 - 4.02). SA increased depression in women (OR = 2.24, 95%CI: 1.03 - 3.45), but not in men (OR	SH increased sleep problems and fatigue in both women (OR = 1.75; 95%CI: 1.30, 2.35) and men (OR = 4.71; 95%CI: 1.68-13.20).

---

= 3.39, 95%CI: 0.40  
- 6.38)

---

Gross et al., 2019 <sup>(37)</sup>	Sexual Harassment or Sexual Abuse  Military Sexual Trauma	DRRI-2 and SHS	PHQ-8 adapted	<i>PTSD symptoms:</i> PCL-C <i>Suicidal ideation (SI):</i> dichotomous questions	Women suffered more MST than men	Correlation of 0.29 between MST and depression for women (p < 0.001) and of 0.10 for men (p < 0.05)	PTSD: correlation of 0.34 between MST and PTSD symptoms for women (p < 0.001) and 0.14 for men (p < 0.01) SI: Correlation of 0.24 between MST and SI for women (p < 0.001) and 0.10 for men (p < 0.05)
Yoo et al., 2019 <sup>(134)</sup>	Sexual Harassment or Sexual Abuse	One direct question	CES-D	---	More women (28.1%) than men (5.6%) reported SH victimization in service (p < 0.001)	SH in the previous year increased current depressive symptoms in men (PR = 1.99, p <	-

---

0.001) and women  
(PR = 2.71, p <  
0.001)

---

p = statistical significance (alpha level); 95%CI: 95% Confidence Interval; Cohen's d = effect size;  $\beta$  = effect size; aOR = adjusted odds ratio; PR = prevalence ratio. SH: Sexual Harassment; SD: Sex Discrimination; CES-D: Center for Epidemiologic Studies – Depression; SA: Sexual Abuse; BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory; PTSD: Post-Traumatic Stress Disorder; PCL-M: PTSD Checklist – military version; SEQ: Sexual Experiences Questionnaire; OTSHI: Organizational Tolerance for Sexual Harassment Inventory; OI: Observed Incivility; WIS: Workplace Incivility Scale; BSI: Brief Symptom Inventory; PCL: PTSD Checklist; SEQ-DoD: Sexual Experiences Questionnaire - Department of Defense version; SF-12: Short Form - 12 Health Survey; SBQ-SF: Suicidal Behaviors Questionnaire Short Form; MHI: Mental Health Index; PHQ: Patient Health Questionnaire; MST: Military Sexual Trauma; DRRI: Deployment Risk and Resilience Inventory; PC-PTSD: Primary Care PTSD; WPDI: Workplace Discrimination Inventory, RD: racial discrimination; PCL-C: PTSD Checklist - Civilian Version; SHS: Sexual Harassment Scale; MDD: Major Depressive Disorder; MHAP: Mental Health Assessment Project; SSI: social status inconsistency; BDI-V: Beck Depression Inventory-V; GAD: Generalized Anxiety Disorder; IPF: Individual Productivity Factors; ERI: Effort-Reward Imbalance Questionnaire; SI: suicidal ideation.

**Table 8. Number of studies reporting exposure to each type of sexism in the workplace.**

Types of sexism	Only women						Women and men			
	Uncommon	0% to 25%	25% to 50%	50% to 75%	More than 75%	Total	No sex differences	Women more exposed	Men more exposed	Total
Sexual harassment	3	3	2	-	-	8	2*	4*	1*	5
MST	-	3	3	1	2	9	-	12	-	12
Gender wage gap	1	-	-	-	-	1	-	2	-	2
Career progression	2	-	-	-	-	2	-	2	-	2
Sex discrimination	2	2	-	2	-	6	1*	3*	1*	3

MST: Military Sexual Trauma

\*In one study<sup>(108)</sup>, the exposure to sexual harassment and sex discrimination varied according to work area: Among service and clerical workers, men were more exposed to overall sexual harassment (SH), among faculty workers women were more exposed to overall SH. No sex differences were found for student workers.

**Table 9. Number of studies reporting the impact of exposure to sexism in the workplace on depression.**

Types of sexism	Women			Women and men				
	No impact	Sexism ↑ depression	Total	No impact	↑ depression in men and women	Higher impact in women	Higher impact in men	Total
Sexual harassment	1*	6	7	2	3 <sup>1</sup>	2 <sup>1</sup>	1	6
MST	2	6	8	-	7	-	2	9
Gender wage gap	-	-	0	1	-	2	-	3
Career progression	-	2	2	1	1	-	-	2
Sex discrimination	-	4	4	-	3	-	-	3

MST: Military Sexual Trauma

\* Tendency

<sup>1</sup> In one cohort study<sup>(136)</sup> sexual harassment increased depression in women and men in the second wave, but in the third wave SH increased depression only in women.



**Table 10. Correlation results reported by studies that sampled only women.**

<b>Citation</b>	<b>Variables</b>	<b>Correlation</b>
Firth-Cozens, 1990 <sup>(101)</sup>	Gender stereotypes and depression	0.33
Piotrkowski, 1998 <sup>(106)</sup>	Sex discrimination and distress	0.33
	White women: sex discrimination and distress (controlling for negative affect)	0.14
	Non-white women: sex discrimination and distress (controlling for negative affect)	0.18
Weatherill et al., 2011 <sup>(119)</sup>	Military sexual harassment and depression	0.13
Szymanski and Feltman, 2014 <sup>(124)</sup>	SOES-RV (sexually objectifying workplaces) and depression	0.19
	Male Gaze and depression	0.16
	ISOS (sexual objectification, high correlation with sexist discrimination) and depression	0.29
Rubin et al., 2017 <sup>(130)</sup>	Interpersonal sexism (sexual harassment) and mental health problems (anxiety and depression)	0.32
	Organizational sexism (career progression, sex discrimination) and mental health problems (anxiety and depression)	0.33
Rubin et al., 2019 <sup>(133)</sup>	Interpersonal sexism (sexual harassment) and mental health problems (anxiety and depression)	0.37
	Organizational sexism (inequal payment, career progression, sex discrimination) and mental health problems (anxiety and depression)	0.41

**Table 11. Correlation results reported by studies that sampled men and women.**

<b>Citation</b>	<b>Variables</b>	<b>Correlation</b>	
		<b>Women</b>	<b>Men</b>
Miner-Rubino and Cortina, 2007 <sup>(111)</sup>	Incivility towards women and well-being	-0.21	-0.21
	Incivility towards men and well-being	-0.20	-0.26
	Institutional unresponsiveness to sexual harassment and well-being	-0.12	-0.12
Shipherd et al., 2009 <sup>(138)</sup>	Military sexual trauma and depression	0.15	-
Peter et al., 2016 <sup>(139)</sup>	Baseline Effort-Reward Imbalance and depression at follow-up	0.29	0.27
Smith et al., 2017 <sup>(96)</sup>	Sexual harassment (military) and depression	0.28	0.22

---

Gross et al., 2019 <sup>(37)</sup>	Military sexual trauma and depression	0.23	0.10
---------------------------------------	---------------------------------------	------	------

---

## 5 DISCUSSION

This systematic review sought to identify the evidence available in academic databases about the impact of exposure to sexism in the workplace on working women's mental health. Search was performed in five databases and the results followed the general trend of increased publications throughout the years.<sup>(144)</sup> Due to the lack of consistency in definitions of sexism and sexual harassment adopted by different research groups and in the instruments to evaluate sexism exposure and depression, the accomplishment of a meta-analysis was not possible.

Considering the lack of an intersectional perspective in studies in this review, it is indispensable to shed light on some particularities of certain aspects of one's identity and their relationship with work. Ethnic minority women do not occupy the same social and labor status as white women, being more likely to work in subordinate positions, have lower salaries and to be harassed at work.<sup>(145–147)</sup> As for transgender women, some authors attribute their sparse presence in the formal labor market to discrimination-related barriers. Even considering the low percentage of people identifying as transgender<sup>(148,149)</sup>, a substantial proportion reports difficulties to be hired or to keep the job positions by virtue of their identity.<sup>(150–153)</sup> Various aspects of one's identity are important in social relationships<sup>(154,155)</sup>, such that interactions between these aspects produce life experiences that are greater than just the simple sum of these identity aspects.<sup>(156,157)</sup> Therefore, considering ethnic issues and the experience of transgender women apart from sexism in scientific research should produce limited interpretations of any subject, an issue that is deepened in studies about work by its history.

Most articles regarding the influence of sexism in the workplace on depression were published after the 1990s, most likely due to dissemination of feminist debates that took place from then on, in the third and fourth feminist waves. In 22 of the 47 studies included in this review the sample was composed exclusively by women, whilst in the remaining 25, the percentage of women ranged between 7.0% to 79.4%, although in most studies the proportion of men and women was balanced. It is worth noticing that some work areas are more traditionally feminine or masculine<sup>(158)</sup>, reinforcing the value of highlighting from which work area(s) the volunteers were sampled. Studies about workplace gender composition show that women working in

male-dominated occupations have more depressive symptoms than women working in female-dominated occupations<sup>(76)</sup>, being sexual orientation a relevant characteristic for this effect.<sup>(77)</sup> This difference in gender composition according to work area is attributed to the sex segregation of labor and care, strictly linked to gender roles, in which males are usually assigned to productive activities, such as work and economy, and females to reproductive activities, such as the education and care of children and the elderly.<sup>(159,160)</sup> One consequence of this structure is that traditionally female areas are less financially rewarded<sup>(103,160,161)</sup> and the evidence arising from this review suggests that mental health impairment is one consequence of the gender wage gap. Not all work areas were represented, and some studies did not disclose this information, but the results indicate that women are victims of sexism at work and receive lower salaries regardless of the work area.

Workplace justice, job control, workload, effort-reward, psychological demands and decision latitude are examples of workplace factors that impact (positive or negatively) the mental health of workers.<sup>(66,162)</sup> Social hierarchy and how its dynamics impact workplace stress are noteworthy too, since men usually have higher job authority.<sup>(71)</sup> Men's higher job positions could be explained by human capital and socialization differences, but studies with transgender working people show that transgender women (assigned male at birth) who choose to remain in traditionally masculine professions report having their skills devaluated by co-workers and employers<sup>(163)</sup> and lose about 31% of their earnings.<sup>(164)</sup> Otherwise, transgender men (assigned female at birth) report gaining authority and respect at work after transitioning<sup>(165)</sup> and an increase of about 10% in their earnings<sup>(164)</sup>, reinforcing the idea that career progression barriers and the wage gap are consequences of gender discrimination.

In countries where gender roles became less traditional throughout the years, such as Spain, Japan and Lebanon, the higher prevalence of depression in women decreased.<sup>(174)</sup> Moreover, women with high conformity to feminine norms are more likely to present psychological symptoms<sup>(175)</sup>, drawing the attention to the importance of the relationship between gender roles conformity and mental health. Motherhood is one essential subject when discussing gender roles. One study showed that working mothers with two or more children have less anxiety and depression than women who have never been pregnant.<sup>(74)</sup> Despite no difference between mothers and non-mothers in the exposure to incivility in the workplace, another study described that

mothers of three children were more exposed to uncivil treatment at work compared to non-mothers and mothers of fewer children. Fathers were more exposed to workplace incivility than non-fathers, but mothers were more exposed than fathers. Being treated uncivilly reduced job satisfaction and increased depression in men and women regardless of parenthood status, however, motherhood mitigated the negative outcomes of being a target of incivility, an effect that has not been identified in fathers.<sup>(73)</sup> Interestingly, in another study, when family characteristics were included as covariates in the statistical analysis the harmful effects of not accomplishing career goals were attenuated in women.<sup>(95)</sup> One possible explanation for these results is that the female gender roles are linked to parenthood in a different way than the male gender roles.<sup>(176,177)</sup> This hypothesis is reinforced by two studies in which women who perceive the roles of motherhood and career as incompatible have higher levels of depression<sup>(94)</sup> and the well-being of working women depends more of work-family conflict than having or not children.<sup>(72)</sup> Furthermore, the current capitalist system of production sees females as responsible for generating, raising and educating new generations of workers<sup>(178–181)</sup>, likely leading women to perceive their role as mothers as more relevant than their role as workers.

Almost half of the articles was produced in the military field. The USA invests substantially in research, which is also true for the military field. The primary outcome in most of these studies was not sexism, but rather the impact of military (sexual or not) trauma. Nevertheless, they evaluated and produced relevant results regarding the presence of women in the military, their exposure to violence and mental health consequences, showing that women are more likely to be victims of sexism and sexual harassment or assault, and that the exposure to this kind of violence increases the risk for psychiatric disorders. Some studies (two of military and two of civil areas), however, brought surprising results, revealing that men are more likely to develop depressive symptoms/disorders after being victims of sexual harassment or assault in the workplace than women.<sup>(108,110,112,128)</sup> One possible explanation is that men are not exposed to sexism or harassment in the same way or as often as women<sup>(54,97,182)</sup> This reality might force women to develop strategies to cope with harassment and sexism<sup>(183)</sup>, increasing their resilience to these events in a way that men do not need to (for more information on the relationship between trauma, coping and resilience, see Friedberg & Malefakis, 2018<sup>(184)</sup>). Importantly, men and women adopt different coping strategies that have different impacts on depressive symptoms.<sup>(17)</sup> For

instance, social support has a meaningful role in mitigating the effects of stressful life events on depression<sup>(45)</sup>, and this is a preferred coping strategy for women.<sup>(17)</sup> At work, social support is positively correlated to job satisfaction for both men and women, whilst low social support is associated with higher psychological distress.<sup>(46)</sup> Women also report higher social support at work.<sup>(46)</sup> Another possibility would be the stigma around being a victim of sexual harassment/abuse, especially for men, which could result in underreporting these incidents, leading the victims to only bring the events to light when they are already psychologically impaired.

Despite the methodological heterogeneity of the primary studies that may have produced the observed diversity of results, this review showed that women are, in general, more exposed to sexual harassment and assault in civil and military workplaces, have lower salaries and face gender-related barriers to job promotions and career progression. Moreover, a high percentage of interviewed women reported being victims of gender discrimination, being that one study even demonstrated that sex discrimination occurs regardless of work class (high- or low skilled, white or blue collar workers).<sup>(123)</sup> Results suggest a positive link between exposure to these types of sexism in the workplace and psychological impairment regardless of the volunteers' sex. Higher female exposure to sexual harassment or assault at work was the most consistent outcome among the types of sexism evaluated, as well as mental health impairment for both sexes as a result of sexual victimization. Because the more common symptoms displayed by depressed women are often accounted for by depression diagnosis than those presented by men<sup>(185)</sup>, the increased prevalence of emotional disorders could be the consequence of misdiagnosis. However, in this systematic review, we intended to focus on the etiopathogenesis of psychological disorders as an inter-relationship among biological, psychological and social factors. Under this background, it seems that social factors play a major role in the onset of depression and comorbidities, at least concerning exposure to gender prejudice as a source of stress. This stands as one possible source for the increased prevalence of emotional disorders in women, since they are more exposed to sexism and more affected by psychological disorders, although from an individual perspective, men seem to be more vulnerable than women to sexual harassment or assault in the workplace.

## 5.1 Future perspectives

This review illustrates the importance of (and the need for) more studies about sexism in the workplace being conducted around the world, especially in underdeveloped and developing countries, which were underrepresented in the present sample. Moreover, it is recommended that groups that are clearly victims of sexism be included, and their diversity accounted for in future research. The work field and workplace composition are other important information to be considered when addressing gender discrimination issues. Finally, findings of sexism at work as a risk factor for mental health problems stand as a call out for public policies and programs in private companies against gender discrimination, promoting diversity and well-being at work. It is also worth mentioning that several studies highlight that science benefits from diversity<sup>(166–171)</sup> and that more diverse enterprises have better financial performance<sup>(172)</sup> and higher business growth<sup>(173)</sup>, reinforcing the importance of programs encouraging these changes.

## **6 CONCLUSIONS**

Women are, in general, more exposed to all sexism-related events at work. Exposure to sexual harassment or assault, gender wage gap and difficulties in job promotions or career progression seem to promote mental health disorders such as depression and comorbidities (anxiety, PTSD and sleep problems). There are results suggesting that men might be more vulnerable to develop psychological disorders after being sexually harassed or assaulted in the workplace, however, women are more exposed and more affected by the evaluated disorders.



## 7 REFERENCES

1. Kessler RC, Bromet EJ. The epidemiology of depression across cultures. *Annu Rev Public Health*. 2013;34:119–38.
2. Razzouk D. Por que o Brasil deveria priorizar o tratamento da depressão na alocação dos recursos da Saúde? *Epidemiol e Serviços Saúde* [Internet]. 2016;25(4):845–8. Available from: [http://scielo.iec.gov.br/scielo.php?script=sci\\_arttext&pid=S1679-49742016000400845&nrm=iso](http://scielo.iec.gov.br/scielo.php?script=sci_arttext&pid=S1679-49742016000400845&nrm=iso)
3. Collaborators GBD 2015 D and II and P. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet* (London, England) [Internet]. 2016 Oct 8;388(10053):1545–602. Available from: <https://pubmed.ncbi.nlm.nih.gov/27733282>
4. Levav I, Rutz W. The WHO World Health Report 2001: New understanding--New hope. Vol. 39, *Israel Journal of Psychiatry and Related Sciences*. Levav, Itzhak: Ministry of Health, Mental Health Services, POB 1176, Jerusalem, Israel, 91010: Gefen Publishing House; 2002. 50–56 p.
5. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* (London, England). 2018 Nov;392(10159):1789–858.
6. Neurological, Psychiatric, and Developmental Disorders: Meeting the Challenge in the Developing World. Washington (DC); 2001.
7. Depressive Disorders. In: *Diagnostic and Statistical Manual of Mental Disorders - 5* [Internet]. American Psychiatric Association; 2013. (DSM Library). Available from: <https://doi.org/10.1176/appi.books.9780890425596.dsm04>
8. Caspi A, Sugden K, Moffitt TE, Taylor A, Craig IW, Harrington H, et al. Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene. *Science*. 2003 Jul;301(5631):386–9.
9. Ford DE, Erlinger TP. Depression and C-reactive protein in US adults: data from the Third National Health and Nutrition Examination Survey. *Arch Intern Med*. 2004 May;164(9):1010–4.
10. Murcia M, Chastang J-F, Niedhammer I. Psychosocial work factors, major depressive and generalised anxiety disorders: results from the French national SIP study. *J Affect Disord*. 2013 Apr;146(3):319–27.

11. Pearson C, Janz T, Ali J. Mental and substance use disorders in Canada. Stat Canada [Internet]. 2013;82:1–8. Available from: <https://doi.org/82-624-X>
12. Cyranowski JM, Frank E, Young E, Shear MK. Adolescent onset of the gender difference in lifetime rates of major depression: a theoretical model. Arch Gen Psychiatry. 2000 Jan;57(1):21–7.
13. Baptista MN, Baptista ASD, Oliveira M das G de. Depressão e gênero: por que as mulheres deprimem mais que os homens? Temas em Psicol [Internet]. 1999;7(2):143–56. Available from: [http://pepsic.bvsalud.org/scielo.php?script=sci\\_arttext&pid=S1413-389X1999000200005&nrm=iso](http://pepsic.bvsalud.org/scielo.php?script=sci_arttext&pid=S1413-389X1999000200005&nrm=iso)
14. Slavich GM, Sacher J. Stress, sex hormones, inflammation, and major depressive disorder: Extending Social Signal Transduction Theory of Depression to account for sex differences in mood disorders. Psychopharmacology (Berl). 2019 Oct;236(10):3063–79.
15. Whittle S, Yücel M, Yap MBH, Allen NB. Sex differences in the neural correlates of emotion: evidence from neuroimaging. Biol Psychol. 2011 Jul;87(3):319–33.
16. Afifi M. Gender differences in mental health. Singapore Med J. 2007 May;48(5):385–91.
17. Nagase Y, Uchiyama M, Kaneita Y, Li L, Kaji T, Takahashi S, et al. Coping strategies and their correlates with depression in the Japanese general population. Psychiatry Res. 2009 Jun;168(1):57–66.
18. Linzer M, Spitzer R, Kroenke K, Williams JB, Hahn S, Brody D, et al. Gender, quality of life, and mental disorders in primary care: results from the PRIME-MD 1000 study. Am J Med. 1996 Nov;101(5):526–33.
19. Cavanagh A, Wilson CJ, Kavanagh DJ, Caputi P. Differences in the Expression of Symptoms in Men Versus Women with Depression: A Systematic Review and Meta-analysis. Harv Rev Psychiatry. 2017;25(1):29–38.
20. Jokela M, Singh-Manoux A, Shipley MJ, Ferrie JE, Gimeno D, Akbaraly TN, et al. Natural course of recurrent psychological distress in adulthood. J Affect Disord. 2011 May;130(3):454–61.
21. Bailey M, Silver R. Sex differences in circadian timing systems: implications for disease. Front Neuroendocrinol. 2014 Jan;35(1):111–39.
22. Yehuda R, Teicher MH, Trestman RL, Levengood RA, Siever LJ. Cortisol regulation in posttraumatic stress disorder and major depression: a chronobiological analysis. Biol Psychiatry. 1996 Jul;40(2):79–88.
23. Knorr U, Vinberg M, Kessing L V, Wetterslev J. Salivary cortisol in

- depressed patients versus control persons: a systematic review and meta-analysis. *Psychoneuroendocrinology*. 2010 Oct;35(9):1275–86.
24. von Zerssen D, Doerr P, Emrich HM, Lund R, Pirke KM. Diurnal variation of mood and the cortisol rhythm in depression and normal states of mind. *Eur Arch Psychiatry Neurol Sci*. 1987;237(1):36–45.
  25. Schulz P, Kirschbaum C, Prüsner J, Hellhammer D. Increased free cortisol secretion after awakening in chronically stressed individuals due to work overload. *Stress Med*. 1998;14(2):91–7.
  26. Ockenfels MC, Porter L, Smyth J, Kirschbaum C, Hellhammer DH, Stone AA. Effect of chronic stress associated with unemployment on salivary cortisol: overall cortisol levels, diurnal rhythm, and acute stress reactivity. *Psychosom Med*. 1995;57(5):460–7.
  27. Meyer EJ, Nenke MA, Rankin W, Lewis JG, Torpy DJ. Corticosteroid-Binding Globulin: A Review of Basic and Clinical Advances. *Horm Metab Res*. 2016 Jun;48(6):359–71.
  28. Van Cauter E, Leproult R, Kupfer DJ. Effects of gender and age on the levels and circadian rhythmicity of plasma cortisol. *J Clin Endocrinol Metab*. 1996 Jul;81(7):2468–73.
  29. Kudielka BM, Buske-Kirschbaum A, Hellhammer DH, Kirschbaum C. HPA axis responses to laboratory psychosocial stress in healthy elderly adults, younger adults, and children: impact of age and gender. *Psychoneuroendocrinology*. 2004 Jan;29(1):83–98.
  30. Kudielka BM, Kirschbaum C. Sex differences in HPA axis responses to stress: a review. *Biol Psychol*. 2005 Apr;69(1):113–32.
  31. Post RM, Weiss SR. Sensitization and kindling phenomena in mood, anxiety, and obsessive-compulsive disorders: the role of serotonergic mechanisms in illness progression. *Biol Psychiatry*. 1998 Aug;44(3):193–206.
  32. Virtanen M, Ferrie JE, Batty GD, Elovainio M, Jokela M, Vahtera J, et al. Socioeconomic and psychosocial adversity in midlife and depressive symptoms post retirement: A 21-year follow-up of the whitehall II study. *Am J Geriatr Psychiatry* [Internet]. 2015;23(1):99-109.e1. Available from: <http://dx.doi.org/10.1016/j.jagp.2014.04.001>
  33. Johansson L, Guo X, Waern M, Ostling S, Gustafson D, Bengtsson C, et al. Midlife psychological stress and risk of dementia: a 35-year longitudinal population study. *Brain*. 2010 Aug;133(Pt 8):2217–24.
  34. Johansson L, Guo X, Hällström T, Norton MC, Waern M, Ostling S, et al. Common psychosocial stressors in middle-aged women related to longstanding distress and increased risk of Alzheimer's disease: a 38-year longitudinal population study. *BMJ Open*. 2013 Sep;3(9):e003142.

35. Verdolini N, Attademo L, Agius M, Ferranti L, Moretti P, Quartesan R. Traumatic events in childhood and their association with psychiatric illness in the adult. *Psychiatr Danub*. 2015 Sep;27 Suppl 1(S):60–70.
36. Khan M, Ilcisin M, Saxton K. Multifactorial discrimination as a fundamental cause of mental health inequities. *Int J Equity Health*. 2017 Mar;16(1):43.
37. Gross GM, Laws H, Park CL, Hoff R, Hoffmire CA. Meaning in life following deployment sexual trauma: Prediction of posttraumatic stress symptoms, depressive symptoms, and suicidal ideation. *Psychiatry Res*. 2019 Aug;278:78–85.
38. McEwen BS, Akil H. Revisiting the Stress Concept: Implications for Affective Disorders. *J Neurosci*. 2020 Jan;40(1):12–21.
39. Perry BL, Harp KLH, Oser CB. Racial and Gender Discrimination in the Stress Process: Implications for African American Women's Health and Well-Being. *Sociol Perspect*. 2013;56(1):25–48.
40. Landrine H, Klonoff EA, Gibbs J, Manning V, Lund M. Physical And Psychiatric Correlates Of Gender Discrimination: An Application of the Schedule of Sexist Events. *Psychol Women Q* [Internet]. 1995 Dec 1;19(4):473–92. Available from: <https://doi.org/10.1111/j.1471-6402.1995.tb00087.x>
41. Hughes D, Dodge MA. African American women in the workplace: relationships between job conditions, racial bias at work, and perceived job quality. *Am J Community Psychol*. 1997 Oct;25(5):581–99.
42. Landrine H, Klonoff EA. The Schedule of Racist Events: A Measure of Racial Discrimination and a Study of Its Negative Physical and Mental Health Consequences. *J Black Psychol* [Internet]. 1996 May 1;22(2):144–68. Available from: <https://doi.org/10.1177/00957984960222002>
43. Jackson SE, Kirschbaum C, Steptoe A. Perceived weight discrimination and chronic biochemical stress: A population-based study using cortisol in scalp hair. *Obesity (Silver Spring)*. 2016 Dec;24(12):2515–21.
44. O'Brien KM, Meyer J, Tronick E, Moore CL. Hair cortisol and lifetime discrimination: Moderation by subjective social status. *Heal Psychol open*. 2017 Jan;4(1):2055102917695176.
45. Chou KL, Chi I. Stressful life events and depressive symptoms: social support and sense of control as mediators or moderators? *Int J Aging Hum Dev*. 2001;52(2):155–71.
46. Bond MA, Punnett L, Pyle JL, Cazeca D, Cooperman M. Gendered work conditions, health, and work outcomes. *J Occup Health Psychol*. 2004 Jan;9(1):28–45.

47. Dion KL, Earn BM. The phenomenology of being a target of prejudice. *J Pers Soc Psychol*. 1975 Nov;32(5):944–50.
48. Compas BE, Malcarne VL, Fondacaro KM. Coping with stressful events in older children and young adolescents. *J Consult Clin Psychol*. 1988 Jun;56(3):405–11.
49. Schmitt MT, Branscombe NR. The Meaning and Consequences of Perceived Discrimination in Disadvantaged and Privileged Social Groups. *Eur Rev Soc Psychol* [Internet]. 2002;12(1):167–99. Available from: <http://www.tandfonline.com/doi/abs/10.1080/14792772143000058>
50. Kaiser C, Miller C. Derogating the Victim: The Interpersonal Consequences of Blaming Events on Discrimination. *Gr Process Intergr Relations - Gr Process Intergr RELA*. 2003 Jul 1;6(3):227–37.
51. Sexism [Internet]. *Encyclopædia Britannica Online*. 2020 [cited 2020 Jun 9]. Available from: <https://www.britannica.com/topic/sexism>
52. Berg SH. Everyday sexism and posttraumatic stress disorder in women: a correlational study. *Violence Against Women*. 2006 Oct;12(10):970–88.
53. Raj A, Johns N, Jose R. Racial/Ethnic Disparities in Sexual Harassment in the United States, 2018. *J Interpers Violence*. 2019 Apr;886260519842171.
54. Swim J, Hyers L, Cohen L, Ferguson M. Everyday Sexism: Evidence for Its Incidence, Nature, and Psychological Impact From Three Daily Diary Studies. *J Soc Issues*. 2001 Jan 1;57(1):31–53.
55. Chamberlain P. Introduction. In: *The Feminist Fourth Wave: Affective Temporality*. 2017. p. 1–19.
56. Munro E. Feminism: A Fourth Wave? *Polit Insight* [Internet]. 2013 Aug 23;4(2):22–5. Available from: <https://doi.org/10.1111/2041-9066.12021>
57. Kroløkke C, Sørensen AS. Three waves of feminism: from suffragettes to grrls. In: *Gender communication theories & analyses: From silence to performance* [Internet]. Thousand Oaks, California; 2006. p. 1–24. Available from: <http://sk.sagepub.com/books/gender-communication-theories-and-analyses>
58. Lee S, McCann D, Messenger JC. Legal progress towards reducing working hours. In: *Working Time Around the World: Trends in Working Hours, Laws and Policies in a Global Comparative Perspective*. 2007. p. 7–21.
59. Fagnani J. Daily Commuting Time: The Stakes for Working Mothers in France. *Transp Res Rec*. 197AD;1135:26–30.
60. Magnusson Hanson LL, Westerlund H, Chungkham HS, Vahtera J, Rod

- NH, Alexanderson K, et al. Job strain and loss of healthy life years between ages 50 and 75 by sex and occupational position: analyses of 64 934 individuals from four prospective cohort studies. *Occup Environ Med*. 2018 Jul;75(7):486–93.
61. Stansfeld S, Feeney A, Head J, Canner R, North F, Marmot M. Sickness absence for psychiatric illness: the Whitehall II Study. *Soc Sci Med*. 1995 Jan;40(2):189–97.
  62. Kessler RC, Barber C, Birnbaum HG, Frank RG, Greenberg PE, Rose RM, et al. Depression in the workplace: effects on short-term disability. *Health Aff (Millwood)*. 1999;18(5):163–71.
  63. da Silva ATC, Peres MFT, Lopes C de S, Schraiber LB, Susser E, Menezes PR. Violence at work and depressive symptoms in primary health care teams: a cross-sectional study in Brazil. *Soc Psychiatry Psychiatr Epidemiol* [Internet]. 2015;50(9):1347–55. Available from: <https://doi.org/10.1007/s00127-015-1039-9>
  64. Murcia M, Chastang J-F, Niedhammer I. Psychosocial work factors, major depressive and generalised anxiety disorders: Results from the French national SIP study. *J Affect Disord* [Internet]. 2013;146(3):319–27. Available from: <http://linkinghub.elsevier.com/retrieve/pii/S0165032712006428>
  65. Wahrendorf M, Sembajwe G, Zins M, Berkman L, Goldberg M, Siegrist J. Long-term effects of psychosocial work stress in midlife on health functioning after labor market exit--results from the GAZEL study. *J Gerontol B Psychol Sci Soc Sci*. 2012 Jul;67(4):471–80.
  66. Theorell T, Hammarström A, Aronsson G, Träskman Bendz L, Grape T, Hogstedt C, et al. A systematic review including meta-analysis of work environment and depressive symptoms. *BMC Public Health*. 2015 Aug;15:738.
  67. Linder A, Gerdtham U-G, Trygg N, Fritzell S, Saha S. Inequalities in the economic consequences of depression and anxiety in Europe: a systematic scoping review. *Eur J Public Health* [Internet]. 2020 Aug 1;30(4):767–77. Available from: <https://doi.org/10.1093/eurpub/ckz127>
  68. Sapolsky RM. The endocrine stress-response and social status in the wild baboon. *Horm Behav*. 1982 Sep;16(3):279–92.
  69. Magariños AM, McEwen BS, Flügge G, Fuchs E. Chronic psychosocial stress causes apical dendritic atrophy of hippocampal CA3 pyramidal neurons in subordinate tree shrews. *J Neurosci*. 1996 May;16(10):3534–40.
  70. Guiraldelli R. Adeus à divisão sexual do trabalho? Desigualdade de gênero na cadeia produtiva da confecção. *Soc e Estado*. 2012;27(3file:///C:/Users/AnimvsNote/Downloads/25413803.nbib):709–

- 32.
71. Pudrovska T, Karraker A. Gender, job authority, and depression. *J Health Soc Behav.* 2014 Dec;55(4):424–41.
72. Beatty CA. The stress of managerial and professional women: Is the price too high? *J Organ Behav.* 1996;17(3):233–51.
73. Miner KN, Pesonen AD, Smittick AL, Seigel ML, Clark EK. Does being a mom help or hurt? Workplace incivility as a function of motherhood status. *J Occup Health Psychol.* 2014 Jan;19(1):60–73.
74. Shirangi A, Fritschi L, Holman CDJ, Morrison D. Mental health in female veterinarians: effects of working hours and having children. *Aust Vet J.* 2013 Apr;91(4):123–30.
75. Nyberg A, Magnusson Hanson LL, Leineweber C, Hammarström A, Theorell T. Occupational gender composition and mild to severe depression in a Swedish cohort: The impact of psychosocial work factors. *Scand J Public Health.* 2018 May;46(3):425–32.
76. Tophoven S, du Prel J-B, Peter R, Kretschmer V. Working in gender-dominated occupations and depressive symptoms: findings from the two age cohorts of the lidA study. *J Labour Mark Res [Internet].* 2015;48(3):247–62. Available from: <https://doi.org/10.1007/s12651-014-0165-2>
77. Ueno K, Vaghela P, Nix AN. Gender composition of the occupation, sexual orientation, and mental health in young adulthood. *Stress Health.* 2018 Feb;34(1):3–14.
78. Platt J, Prins S, Bates L, Keyes K. Unequal depression for equal work? How the wage gap explains gendered disparities in mood disorders. *Soc Sci Med.* 2016 Jan;149:1–8.
79. Aplicada I de PE, Mulheres O, Mulheres S de P para as, Racial S de P de P da I. Retrato das Desigualdades de Gênero e Raça. 2011.
80. Instituto Ethos. Perfil Social, Racial e de Gênero das 500 Maiores Empresas do Brasil e Suas Ações Afirmativas. 2010.
81. Thurston RC, Chang Y, Matthews KA, von Känel R, Koenen K. Association of Sexual Harassment and Sexual Assault With Midlife Women's Mental and Physical Health. *JAMA Intern Med.* 2019 Jan;179(1):48–53.
82. Ross CE, Bird CE. Sex stratification and health lifestyle: consequences for men's and women's perceived health. *J Health Soc Behav.* 1994 Jun;35(2):161–78.
83. Galvao T, Pereira MG. Revisões sistemáticas da literatura: passos para sua elaboração. *Rev Epidemiol e Serviços Saúde.* 2014 Mar

- 1;23(1):183–4.
84. GA Wells, B Shea, D O'Connell, J Peterson, V Welch, M Losos PT. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses [Internet]. [cited 2020 Oct 10]. Available from: [http://www.ohri.ca/programs/clinical\\_epidemiology/oxford.asp](http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp)
  85. Brüggmann D, Groneberg DA. An index to characterize female career promotion in academic medicine. *J Occup Med Toxicol*. 2017;12:18.
  86. Dagher RK, McGovern PM, Alexander BH, Dowd BE, Ukestad LK, McCaffrey DJ. The psychosocial work environment and maternal postpartum depression. *Int J Behav Med*. 2009;16(4):339–46.
  87. Turner HA. The significance of employment for chronic stress and psychological distress among rural single mothers. *Am J Community Psychol*. 2007 Dec;40(3–4):181–93.
  88. Katsulis Y, Lopez V, Durfee A, Robillard A. Female sex workers and the social context of workplace violence in Tijuana, Mexico. *Med Anthropol Q*. 2010 Sep;24(3):344–62.
  89. Suresh G, Furr LA, Srikrishnan AK. An Assessment of the Mental Health of Street-Based Sex Workers in Chennai, India. *J Contemp Crim Justice* [Internet]. 2009 May 1;25(2):186–201. Available from: <https://doi.org/10.1177/1043986209333590>
  90. Roxburgh A, Degenhardt L, Copeland J. Posttraumatic stress disorder among female street-based sex workers in the greater Sydney area, Australia. *BMC Psychiatry* [Internet]. 2006 May 24;6:24. Available from: <https://pubmed.ncbi.nlm.nih.gov/16719928>
  91. Cwikel J, Chudakov B, Paikin M, Agmon K, Belmaker RH. Trafficked female sex workers awaiting deportation: comparison with brothel workers. *Arch Womens Ment Health*. 2004 Oct;7(4):243–9.
  92. Cwikel J, Ilan K, Chudakov B. Women brothel workers and occupational health risks. *J Epidemiol Community Health* [Internet]. 2003 Oct;57(10):809–15. Available from: <https://pubmed.ncbi.nlm.nih.gov/14573588>
  93. Oprea S, Kalmijn M. Exploring causal effects of combining work and intergenerational support on depressive symptoms among middle-aged women. *Ageing Soc*. 2012 Jan 1;32(1):130–46.
  94. Lee K, Um C, Kim S. Multiple Roles of Married Korean Women: Effect on Depression. *Sex Roles*. 2004 Oct 1;51(7):469–78.
  95. Carr D. The fulfillment of career dreams at midlife: does it matter for women's mental health? *J Health Soc Behav*. 1997 Dec;38(4):331–44.



96. Smith BN, Taverna EC, Fox AB, Schnurr PP, Matteo RA, Vogt D. The Role of PTSD, Depression, and Alcohol Misuse Symptom Severity in Linking Deployment Stressor Exposure and Post-Military Work and Family Outcomes in Male and Female Veterans. *Clin Psychol Sci*. 2017;5(4):664–82.
97. Foynes MM, Shipherd JC, Harrington EF. Race and gender discrimination in the Marines. *Cultur Divers Ethnic Minor Psychol*. 2013 Jan;19(1):111–9.
98. Gradus JL, Street AE, Suvak MK, Resick PA. Predictors of suicidal ideation in a gender-stratified sample of OEF/OIF veterans. *Suicide Life-Threatening Behav*. 2013;43(5):574–88.
99. Hom MA, Stanley IH, Spencer-Thomas S, Joiner TE. Women Firefighters and Workplace Harassment: Associated Suicidality and Mental Health Sequelae. *J Nerv Ment Dis*. 2017 Dec;205(12):910–7.
100. Welner A, Marten S, Wochnick E, Davis MA, Fishman R, Clayton PJ. Psychiatric disorders among professional women. *Arch Gen Psychiatry*. 1979 Feb;36(2):169–73.
101. Firth-Cozens J. Source of stress in women junior house officers. *BMJ*. 1990 Jul;301(6743):89–91.
102. Murdoch M, Nichol KL. Women veterans' experiences with domestic violence and with sexual harassment while in the military. *Arch Fam Med*. 1995 May;4(5):411–8.
103. Ross C, Mirowsky J. Economic and Interpersonal Work Rewards: Subjective Utilities of Men's and Women's Compensation. *Soc Forces*. 1996 Sep 1;75(1):223–45.
104. Fitzgerald LF, Drasgow F, Hulin CL, Gelfand MJ, Magley VJ. Antecedents and consequences of sexual harassment in organizations: a test of an integrated model. *J Appl Psychol*. 1997 Aug;82(4):578–89.
105. Frank E, Brogan D, Schiffman M. Prevalence and correlates of harassment among US women physicians. *Arch Intern Med*. 1998 Feb;158(4):352–8.
106. Piotrkowski CS. Gender harassment, job satisfaction, and distress among employed white and minority women. *J Occup Health Psychol*. 1998 Jan;3(1):33–43.
107. Magley VJ, Waldo CR, Drasgow F, Fitzgerald LF. The Impact of Sexual Harassment on Military Personnel: Is It the Same for Men and Women? *Mil Psychol* [Internet]. 1999 Jan 1;11(3):283–302. Available from: [https://doi.org/10.1207/s15327876mp1103\\_5](https://doi.org/10.1207/s15327876mp1103_5)
108. Richman JA, Rospenda KM, Nawyn SJ, Flaherty JA, Fendrich M, Drum ML, et al. Sexual harassment and generalized workplace abuse among

- university employees: prevalence and mental health correlates. *Am J Public Health*. 1999 Mar;89(3):358–63.
109. DeRoma V, Root L, Smith B. Socioenvironmental Context of Sexual Trauma and Well-Being of Women Veterans. *Mil Med*. 2003 Jun 1;168(5):399–403.
  110. Vogt DS, Pless AP, King LA, King DW. Deployment stressors, gender, and mental health outcomes among Gulf War I veterans. *J Trauma Stress*. 2005 Jun;18(3):272–84.
  111. Miner-Rubino K, Cortina LM. Beyond targets: consequences of vicarious exposure to misogyny at work. *J Appl Psychol*. 2007 Sep;92(5):1254–69.
  112. Street AE, Gradus JL, Stafford J, Kelly K. Gender differences in experiences of sexual harassment: data from a male-dominated environment. *J Consult Clin Psychol*. 2007 Jun;75(3):464–74.
  113. Street AE, Stafford J, Mahan CM, Hendricks A. Sexual harassment and assault experienced by reservists during military service: prevalence and health correlates. *J Rehabil Res Dev*. 2008;45(3):409–19.
  114. DeSouza ER, Cerqueira E. From the kitchen to the bedroom: frequency rates and consequences of sexual harassment among female domestic workers in Brazil. *J Interpers Violence*. 2009 Aug;24(8):1264–84.
  115. Marsh J, Patel S, Gelaye B, Goshu M, Worku A, Williams MA, et al. Prevalence of workplace abuse and sexual harassment among female faculty and staff. *J Occup Health*. 2009;51(4):314–22.
  116. Kimerling R, Street AE, Pavao J, Smith MW, Cronkite RC, Holmes TH, et al. Military-related sexual trauma among Veterans Health Administration patients returning from Afghanistan and Iraq. *Am J Public Health*. 2010 Aug;100(8):1409–12.
  117. Dutra L, Grubbs K, Greene C, Trego LL, McCartin TL, Kloezeman K, et al. Women at war: implications for mental health. *J Trauma Dissociation*. 2011;12(1):25–37.
  118. Kelly UA, Skelton K, Patel M, Bradley B. More than military sexual trauma: Interpersonal violence, PTSD, and mental health in women veterans. *Res Nurs Heal*. 2011;34(6):457–67.
  119. Weatherill R, Vogt D, Taft C, King L, King D, Shipherd J. Training Experiences as Mediators of the Association Between Gender-Role Egalitarianism and Women's Adjustment to Marine Recruit Training. *Sex Roles*. 2011 Mar 1;64(5):348–59.
  120. Maguen S, Luxton DD, Skopp NA, Madden E. Gender differences in traumatic experiences and mental health in active duty soldiers redeployed from Iraq and Afghanistan. *J Psychiatr Res*. 2012 Mar;46(3):311–6.

121. Gradus JL, Street AE, Suvak MK, Resick PA. Predictors of suicidal ideation in a gender-stratified sample of OEF/OIF veterans. *Suicide Life Threat Behav.* 2013 Oct;43(5):574–88.
122. Pavao J, Turchik JA, Hyun JK, Karpenko J, Saweikis M, McCutcheon S, et al. Military sexual trauma among homeless veterans. *J Gen Intern Med.* 2013 Jul;28 Suppl 2(Suppl 2):S536-41.
123. Ardito C, D'Errico A, Leombruni R. Exposure to psychosocial factors at work and mental well-being in Europe. *Med Lav.* 2014;105(2):85–99.
124. Szymanski DM, Feltman CE. Linking Sexually Objectifying Work Environments Among Waitresses to Psychological and Job-Related Outcomes. *Psychol Women Q* [Internet]. 2014 Dec 31;39(3):390–404. Available from: <https://doi.org/10.1177/0361684314565345>
125. Stahlman S, Javanbakht M, Cochran S, Hamilton AB, Shoptaw S, Gorbach PM. Mental Health and Substance Use Factors Associated With Unwanted Sexual Contact Among U.S. Active Duty Service Women. *J Trauma Stress.* 2015 Jun;28(3):167–73.
126. Cohen GH, Sampson LA, Fink DS, Wang J, Russell D, Gifford R, et al. Gender, Position of Authority, and the Risk of Depression and Posttraumatic Stress Disorder among a National Sample of U.S. Reserve Component Personnel. *Womens Health Issues.* 2016;26(3):268–77.
127. Kearns JC, Gorman KR, Bovin MJ, Green JD, Rosen RC, Keane TM, et al. The effect of military sexual assault, combat exposure, postbattle experiences, and general harassment on the development of PTSD and MDD in Female OEF/OIF veterans. *Transl Issues Psychol Sci.* 2016;2(4):418–28.
128. Meyer SR, Decker MR, Tol WA, Abshir N, Mar AA, Robinson WC. Workplace and security stressors and mental health among migrant workers on the Thailand-Myanmar border. *Soc Psychiatry Psychiatr Epidemiol.* 2016 May;51(5):713–23.
129. Goldstein LA, Dinh J, Donalson R, Hebenstreit CL, Maguen S. Impact of military trauma exposures on posttraumatic stress and depression in female veterans. *Psychiatry Res.* 2017 Mar;249:281–5.
130. Rubin M, Subasic E, Giacomini A, Paolini S. An exploratory study of the relations between women miners' gender-based workplace issues and their mental health and job satisfaction: RUBIN et al. *J Appl Soc Psychol.* 2017 May 14;47:400–11.
131. Blais R, Brignone E, Fargo J, Livingston W, Andresen F. The importance of distinguishing between harassment-only and assault military sexual trauma during screening. *Mil Psychol.* 2019 May 10;31(3):1–6.

132. Gale S, Mordukhovich I, Newlan S, McNeely E. The Impact of Workplace Harassment on Health in a Working Cohort. *Front Psychol.* 2019;10:1181.
133. Rubin M, Paolini S, Subasic E, Giacomini A. A confirmatory study of the relations between workplace sexism, sense of belonging, mental health, and job satisfaction among women in male-dominated industries. *J Appl Soc Psychol.* 2019 Jan 15;49:267–82.
134. Yoo J, Kim J-H, Yoon J, Kim S-S. Sexual harassment and its relationship with depressive symptoms: A nationwide study of Korean EMS providers. *Am J Ind Med.* 2019 Jan;62(1):74–9.
135. Reifman A, Biernat M, Lang EL. Stress, Social Support, and Health in Married Professional Women with Small Children. *Psychol Women Q* [Internet]. 1991 Nov 1;15(3):431–45. Available from: <https://doi.org/10.1111/j.1471-6402.1991.tb00419.x>
136. Richman JA, Rospenda KM, Flaherty JA, Freels S, Zlatoper K. Perceived organizational tolerance for workplace harassment and distress and drinking over time [harassment and mental health]. *Women Health.* 2004;40(4):1–23.
137. Rospenda KM, Richman JA, Shannon CA. Patterns of workplace harassment, gender, and use of services: an update. *J Occup Health Psychol.* 2006 Oct;11(4):379–93.
138. Shipherd JC, Pineles SL, Gradus JL, Resick PA. Sexual harassment in the Marines, posttraumatic stress symptoms, and perceived health: evidence for sex differences. *J Trauma Stress.* 2009 Feb;22(1):3–10.
139. Peter R, March S, du Prel J-B. Are status inconsistency, work stress and work-family conflict associated with depressive symptoms? Testing prospective evidence in the lidA study. *Soc Sci Med.* 2016 Feb;151:100–9.
140. Wege N, Li J, Siegrist J. Are there gender differences in associations of effort-reward imbalance at work with self-reported doctor-diagnosed depression? Prospective evidence from the German Socio-Economic Panel. *Int Arch Occup Environ Health.* 2018 May;91(4):435–43.
141. Firth MT, Mohamad H. Men, sex and context in psychosexual therapy: Finding a suitable frame. *Sex Relatsh Ther* [Internet]. 2007;22(2):221–35. Available from: <https://www.embase.com/search/results?subaction=viewrecord&id=L46681074&from=export>
142. Military Sexual Trauma. United States Department of Veteran Affairs. 2020.
143. Kelly UA, Skelton K, Patel M, Bradley B. More than military sexual

- trauma: interpersonal violence, PTSD, and mental health in women veterans. *Res Nurs Health*. 2011 Dec;34(6):457–67.
144. Bornmann L, Mutz R. Growth rates of modern science: A bibliometric analysis based on the number of publications and cited references: Growth Rates of Modern Science: A Bibliometric Analysis Based on the Number of Publications and Cited References. *J Assoc Inf Sci Technol*. 2014 Jan 31;66(11):2215–22.
  145. Berdahl JL, Moore C. Workplace harassment: double jeopardy for minority women. *J Appl Psychol*. 2006 Mar;91(2):426–36.
  146. DuMonthier A, Childers C, Milli J. The Status of Black Women in the United States [Internet]. 2017. Available from: [www.iwpr.org/www.statusofwomendata.org](http://www.iwpr.org/www.statusofwomendata.org)
  147. Wright J. Women in the workplace. *Eng Technol*. 2009;4(9):78–9.
  148. Arcelus J, Bouman WP, Van Den Noortgate W, Claes L, Witcomb G, Fernandez-Aranda F. Systematic review and meta-analysis of prevalence studies in transsexualism. *Eur Psychiatry*. 2015 Sep;30(6):807–15.
  149. Crissman HP, Berger MB, Graham LF, Dalton VK. Transgender Demographics: A Household Probability Sample of US Adults, 2014. *Am J Public Health [Internet]*. 2016/12/20. 2017 Feb;107(2):213–5. Available from: <https://pubmed.ncbi.nlm.nih.gov/27997239>
  150. Badgett L, Lau H, Sears B, Ho D. Bias in the Workplace: Consistent Evidence of Sexual Orientation and Gender Identity Discrimination. *Chic Kent Law Rev*. 2007 Jan 1;84(2):559–95.
  151. Bauer G, Scheim A. Transgender People in Ontario, Canada: Statistics from the Trans PULSE Project to Inform Human Rights Policy. 2015 Jun.
  152. Leppel K. The labor force status of transgender men and women. *Int J Transgenderism*. 2016 Oct 13;17(3):1–10.
  153. Waite S. Should I Stay or Should I Go? Employment Discrimination and Workplace Harassment against Transgender and Other Minority Employees in Canada's Federal Public Service. *J Homosex [Internet]*. 2020;00(00):1–27. Available from: <https://doi.org/10.1080/00918369.2020.1712140>
  154. Côté S, Kraus MW, Carpenter NC, Piff PK, Beermann U, Keltner D. Social affiliation in same-class and cross-class interactions. *J Exp Psychol Gen*. 2017 Feb;146(2):269–85.
  155. Kang S, Bodenhausen G. Multiple Identities in Social Perception and Interaction: Challenges and Opportunities. *Annu Rev Psychol*. 2014 Jul 25;66:547–74.

156. Crenshaw K. Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics. *Univ Chic Leg Forum*. 1989;(1):8.
157. DeFelice KA, Diller JW. Intersectional Feminism and Behavior Analysis. *Behav Anal Pract*. 2019 Dec;12(4):831–8.
158. World Health Organization. Gender equality, work and health: a review of the evidence. World Health Organization. 2006.
159. Hirata H, Kergoat D. Novas configurações da divisão sexual do trabalho. Vol. 37, *Cadernos de Pesquisa*. scielo; 2007. p. 595–609.
160. Reskin BF. Sex Segregation at Work. *Int Encycl Soc Behav Sci*. 2001;13962–5.
161. Ferguson L. Gender, Work, and the Sexual Division of Labor [Internet]. Waylen G, Celis K, Kantola J, Weldon SL, editors. Oxford University Press; 2013. 1–28 p. Available from: <https://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199751457.001.0001/oxfordhb-9780199751457-e-13>
162. Aronsson G, Theorell T, Grape T, Hammarström A, Hogstedt C, Marteinsdottir I, et al. A systematic review including meta-analysis of work environment and burnout symptoms. *BMC Public Health*. 2017 Mar;17(1):264.
163. Schilt K, Connell C. Do Workplace Gender Transitions Make Gender Trouble? *Gender, Work Organ* [Internet]. 2007 Nov 1;14(6):596–618. Available from: <https://doi.org/10.1111/j.1468-0432.2007.00373.x>
164. Schilt K, Wiswall M. Before and After: Gender Transitions, Human Capital, and Workplace Experiences. *Contrib Econ Analysis Policy*. 2008 Feb 1;8(1):1862.
165. Schilt K. Just One of the Guys? How Transmen Make Gender Visible at Work. *Gend Soc* [Internet]. 2006 Aug 1;20(4):465–90. Available from: <https://doi.org/10.1177/0891243206288077>
166. Swartz TH, Palermo A-GS, Masur SK, Aberg JA. The Science and Value of Diversity: Closing the Gaps in Our Understanding of Inclusion and Diversity. *J Infect Dis* [Internet]. 2019 Aug 20;220(Supplement\_2):S33–41. Available from: <https://doi.org/10.1093/infdis/jiz174>
167. Smith-Doerr L, Alegria SN, Sacco T. How Diversity Matters in the US Science and Engineering Workforce: A Critical Review Considering Integration in Teams, Fields, and Organizational Contexts. *Engag Sci Technol Soc Vol 3* (2017)DO - 1017351/ests2017142 [Internet]. 2017 Apr 2; Available from: <https://www.estsjournal.org/index.php/ests/article/view/142>
168. Powell K. These labs are remarkably diverse - here's why they're

- winning at science. *Nature*. 2018 Jun;558(7708):19–22.
169. Freeman RB, Huang W. Collaboration: Strength in diversity. *Nature*. 2014 Sep;513(7518):305.
  170. AlShebli BK, Rahwan T, Woon WL. The preeminence of ethnic diversity in scientific collaboration. *Nat Commun* [Internet]. 2018;9(1):5163. Available from: <https://doi.org/10.1038/s41467-018-07634-8>
  171. Adams J. The fourth age of research. *Nature* [Internet]. 2013;497(7451):557–60. Available from: <https://doi.org/10.1038/497557a>
  172. McKinsey & Company. Delivering through Diversity [Internet]. McKinsey & Company. 2018. Available from: [https://www.mckinsey.com/~media/McKinsey/Business Functions/Organization/Our Insights/Delivering through diversity/Delivering-through-diversity\\_full-report.ashx%0Ahttps://www.ifsskillnet.ie/wp-content/uploads/2019/01/Delivering-Through-Diversity.pdf%0Aht](https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Organization/Our%20Insights/Delivering%20through%20diversity/Delivering-through-diversity_full-report.ashx%0Ahttps://www.ifsskillnet.ie/wp-content/uploads/2019/01/Delivering-Through-Diversity.pdf%0Aht)
  173. Crowe Global. The Art of Smart. Vol. 2. 2019.
  174. Seedat S, Scott KM, Angermeyer MC, Berglund P, Bromet EJ, Brugha TS, et al. Cross-national associations between gender and mental disorders in the World Health Organization World Mental Health Surveys. *Arch Gen Psychiatry*. 2009 Jul;66(7):785–95.
  175. Esteban-Gonzalo S, Aparicio M, Estaban-Gonzalo L. Employment status, gender and health in Spanish women. *Women Heal*. 2018;58(7):744–58.
  176. Endendijk JJ, Groeneveld MG, Mesman J. The gendered family process model: An integrative framework of gender in the family. Vol. 47, *Archives of Sexual Behavior*. Mesman, Judi: Centre for Child and Family Studies, Leiden University, P.O. Box 9555, Leiden, Netherlands, 2300 RB, [mesmanj@fsw.leidenuniv.nl](mailto:mesmanj@fsw.leidenuniv.nl); Springer; 2018. p. 877–904.
  177. Meeussen L, Veldman J, Van Laar C. Combining Gender, Work, and Family Identities: The Cross-Over and Spill-Over of Gender Norms into Young Adults' Work and Family Aspirations. *Front Psychol*. 2016;7:1781.
  178. Hernandez M. Capitalism and motherhood. In: O'Reilly A, editor. *Encyclopedia of motherhood*. SAGE Publications Inc; 2010. p. 163–5.
  179. Maätita F. Motherhood penalty. In: O'Reilly A, editor. *Encyclopedia of motherhood*. SAGE Publications, Inc; 2010. p. 825–825.
  180. Maher J. Mothering as work. In: O'Reilly A, editor. *Encyclopedia of motherhood*. SAGE Publications Inc; 2010. p. 835–6.
  181. Smith S. The Family Under Capitalism. In: *Women and Socialism: Essays on Women's Liberation*. 2005. p. 51–6.

182. Sivertsen B, Nielsen MB, Madsen IEH, Knapstad M, Lønning KJ, Hysing M. Sexual harassment and assault among university students in Norway: a cross-sectional prevalence study. *BMJ Open* [Internet]. 2019 Jun 1;9(6):e026993. Available from: <http://bmjopen.bmj.com/content/9/6/e026993.abstract>
183. Scarduzio JA, Sheff SE, Smith M. Coping and Sexual Harassment: How Victims Cope across Multiple Settings. *Arch Sex Behav* [Internet]. 2018;47(2):327–40. Available from: <https://doi.org/10.1007/s10508-017-1065-7>
184. Friedberg A, Malefakis D. Resilience, Trauma, and Coping. *Psychodyn Psychiatry* [Internet]. 2018 Feb 26;46(1):81–113. Available from: <https://doi.org/10.1521/pdps.2018.46.1.81>
185. Neitzke AB. An Illness of Power: Gender and the Social Causes of Depression. *Cult Med Psychiatry*. 2016 Mar;40(1):59–73.



## Appendix 1 – Ethic Committee Approval



### PARECER CONSUBSTANCIADO DO CEP

#### DADOS DO PROJETO DE PESQUISA

**Título da Pesquisa:** Efeitos do sexismo no ambiente de trabalho sobre a saúde mental de mulheres: uma revisão sistemática

**Pesquisador:** NATALIA MARIA SIMIONATO

**Área Temática:**

**Versão:** 1

**CAAE:** 88162618.6.0000.5505

**Instituição Proponente:** UNIVERSIDADE FEDERAL DE SÃO PAULO

**Patrocinador Principal:** Financiamento Próprio

#### DADOS DO PARECER

**Número do Parecer:** 2.645.865

#### Apresentação do Projeto:

Projeto CEP/UNIFESP n:0438/2018

Os transtornos depressivos e ansiosos apresentam aproximadamente o dobro de prevalência em mulheres, comparando com homens. As razões para essa incidência não estão claras e podem ter origem biológica e/ou cultural/social. A desigualdade de gênero ainda é um problema recorrente no cotidiano das mulheres. Sabendo que o preconceito, em todas as suas formas, assim como a exposição ao estresse no ambiente de trabalho, pode contribuir para o desenvolvimento de transtornos psiquiátricos, este estudo tem como objetivo avaliar se a exposição ao sexismo neste ambiente poderia atuar como fator de risco para o desenvolvimento de depressão em mulheres. Para tanto, será realizada uma revisão sistemática da literatura nas bases de dados MEDLINE (PubMed), EMBASE, LILACS, PsychINFO e Web of Science buscando por artigos em inglês, espanhol e português que correlacionem aspectos da desigualdade sexual no ambiente de trabalho à depressão. Todos os estudos recuperados na busca inicial serão avaliados por título e resumo, individualmente, por dois pesquisadores. Artigos que tenham palavras-chave pertinentes ao tema deste trabalho serão selecionados para leitura completa. Serão incluídos neste trabalho estudos de coorte ou caso-controle que tenham avaliado disparidade salarial entre homens e mulheres, assédio sexual no ambiente de trabalho ou progressão mais lenta na carreira das mulheres e o desenvolvimento de transtornos depressivos. Os artigos que atenderem aos critérios de inclusão no estudo serão submetidos a uma avaliação de qualidade e seus dados serão extraídos para uma

**Endereço:** Rua Francisco de Castro, 55

**Bairro:** VILA CLEMENTINO

**CEP:** 04.020-050

**UF:** SP

**Município:** SÃO PAULO

**Telefone:** (11)5571-1062

**Fax:** (11)5539-7162

**E-mail:** cep@unifesp.edu.br



Continuação do Parecer: 2.645.865

tabela padronizada. Em seguida, se possível, será realizada uma meta-análise.

-HIPÓTESE: A hipótese do presente projeto é que as desigualdades salariais e de progressão na carreira, entre os sexos, associadas ou não ao assédio sexual no ambiente de trabalho, podem ser importantes fatores desencadeadores de depressão em mulheres.

#### **Objetivo da Pesquisa:**

-OBJETIVO PRIMÁRIO: O objetivo geral do estudo é identificar, por meio de uma revisão sistemática da literatura, se a desigualdade sexual no ambiente de trabalho é um fator de risco para o desenvolvimento de transtornos depressivos em mulheres.

-OBJETIVO SECUNDÁRIO: Os objetivos específicos são: - Avaliar se o assédio sexual no ambiente de trabalho é um fator de risco para o desenvolvimento de depressão em mulheres; - Avaliar se a disparidade salarial entre homens e mulheres é um fator de risco para o desenvolvimento de depressão;- Avaliar se a progressão de carreira mais lenta para mulheres do que para homens é um fator de risco para o desenvolvimento de depressão;- Estimar o impacto e a hierarquia de cada uma dessas exposições para o desenvolvimento de depressão em mulheres.

#### **Avaliação dos Riscos e Benefícios:**

Em relação aos riscos e benefícios, o pesquisador declara:

-RISCOS: Como não se trata de um estudo primário, não haverá contato direto com os voluntários. Ou seja, serão avaliados somente dados coletados anteriormente e publicados na forma de artigos a serem recuperados das bases de dados especificadas nas outras sessões. Sendo assim, não existem riscos evidentes.

-BENEFÍCIOS: A desigualdade sexual ainda está muito presente no cotidiano das mulheres e a depressão é uma doença cuja importância vem sendo cada vez mais reconhecida. Sendo assim, é fundamental que sejam realizados estudos que avaliem os efeitos da exposição a esse tipo de preconceito sobre a saúde mental das mulheres. Além da realização de estudos originais, é importante realizar revisões sistemáticas da literatura com o objetivo de integrar os dados disponíveis porque pode gerar comprovação do que alguns movimentos sociais vem reivindicando e, no futuro, guiar políticas públicas que ajudem a promover a igualdade de gênero nos ambientes de trabalho, além de políticas de saúde pública e saúde mental focadas nas necessidades particulares das mulheres.

**Endereço:** Rua Francisco de Castro, 55  
**Bairro:** VILA CLEMENTINO **CEP:** 04.020-050  
**UF:** SP **Município:** SAO PAULO  
**Telefone:** (11)5571-1062 **Fax:** (11)5539-7162 **E-mail:** cep@unifesp.edu.br



Continuação do Parecer: 2.645.865

**Comentários e Considerações sobre a Pesquisa:**

Trata-se de projeto de mestrado de NATALIA MARIA SIMIONATO. Orientadora: Profa. Dra. Deborah Suchecki. Projeto vinculado ao Departamento de Psicobiologia, SP-EPM, UNIFESP.

**PROCEDIMENTOS:**

O estudo consiste em uma revisão sistemática da literatura com o objetivo de avaliar se a exposição ao sexismo no ambiente de trabalho pode atuar como fator de risco para o desenvolvimento de depressão em mulheres. Para tanto, será realizada uma busca nas bases de dados MEDLINE (PubMed), EMBASE, LILACS, PsychINFO e Web of Science com descritores relacionados à associação entre aspectos da desigualdade sexual no ambiente de trabalho e depressão. Serão avaliados artigos nos seguintes idiomas: inglês, espanhol e português. Todos os estudos recuperados na busca inicial serão avaliados por título e resumo, individualmente, por dois pesquisadores. Artigos que tenham palavras-chave pertinentes ao tema deste trabalho serão selecionados para leitura completa. Serão incluídos neste trabalho estudos de coorte ou caso-controle que tenham avaliado disparidade salarial entre homens e mulheres, assédio sexual no ambiente de trabalho ou progressão mais lenta na carreira das mulheres e o desenvolvimento de transtornos depressivos. Os artigos que atenderem aos critérios de inclusão no estudo serão submetidos a uma avaliação de qualidade e seus dados serão extraídos para uma tabela padronizada. Se possível também será realizada uma meta-análise.

**Considerações sobre os Termos de apresentação obrigatória:**

- 1- Foram apresentados os principais documentos: folha de rosto; projeto completo; cópia do cadastro CEP/UNIFESP, orçamento financeiro e cronograma apresentados adequadamente.
- 2- não haverá TCLE pois trata-se de revisão sistemática.

**Recomendações:**

sem recomendações

**Conclusões ou Pendências e Lista de Inadequações:**

aprovado

**Endereço:** Rua Francisco de Castro, 55  
**Bairro:** VILA CLEMENTINO **CEP:** 04.020-050  
**UF:** SP **Município:** SAO PAULO  
**Telefone:** (11)5571-1062 **Fax:** (11)5539-7162 **E-mail:** cep@unifesp.edu.br



Continuação do Parecer: 2.645.865

**Considerações Finais a critério do CEP:**

O CEP informa que a partir desta data de aprovação, é necessário o envio de relatórios parciais (semestralmente), e o relatório final, quando do término do estudo.

**Este parecer foi elaborado baseado nos documentos abaixo relacionados:**

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1103004.pdf	20/04/2018 14:22:42		Aceito
Outros	Folhaassinada_CEP_UNIFESP.pdf	20/04/2018 14:20:19	NATALIA MARIA SIMIONATO	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TCLE.pdf	05/04/2018 22:42:26	NATALIA MARIA SIMIONATO	Aceito
Projeto Detalhado / Brochura Investigador	Projeto_de_Mestrado_Natalia_Simionato.pdf	05/04/2018 22:42:16	NATALIA MARIA SIMIONATO	Aceito
Folha de Rosto	folha_de_rosto_Natalia_Simionato.pdf	05/04/2018 22:31:52	NATALIA MARIA SIMIONATO	Aceito

**Situação do Parecer:**

Aprovado

**Necessita Apreciação da CONEP:**

Não

SAO PAULO, 09 de Maio de 2018

---

**Assinado por:**  
**Miguel Roberto Jorge**  
(Coordenador)

**Endereço:** Rua Francisco de Castro, 55  
**Bairro:** VILA CLEMENTINO **CEP:** 04.020-050  
**UF:** SP **Município:** SAO PAULO  
**Telefone:** (11)5571-1062 **Fax:** (11)5539-7162 **E-mail:** cep@unifesp.edu.br



## Appendix 2 – PROSPERO Registration

Effects of sexism in the workplace on women's mental health: a systematic review.  
*Natalia Maria Simionato, Deborah Suchecki, Priscila Brandi Gomes Godoy*

To enable PROSPERO to focus on COVID-19 registrations during the 2020 pandemic, this registration record was automatically published exactly as submitted. The PROSPERO team has not checked eligibility.

### Citation

Natalia Maria Simionato, Deborah Suchecki, Priscila Brandi Gomes Godoy. Effects of sexism in the workplace on women's mental health: a systematic review.. PROSPERO 2020 CRD42020167784 Available from: [https://www.crd.york.ac.uk/prospero/display\\_record.php?ID=CRD42020167784](https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020167784)

### Review question

Main research question: Is sexism in the workplace a recurrent subject in occupational stress studies related to depression?

Specific research questions: Does exposure to sexism in the workplace impair the mental health of working women?

Are sexual and gender harassment in the workplace risk factors for depression in working women?

Is the gender pay gap a risk factor for depression in working women?

Is slower career progression a risk factor for depression in working women?

If these exposures impact women's mental health, is there a difference in how much each of them contribute to the development of depression? If so, what is the impact of each factor?

### Searches

We carried out the search, in February of 2019, in five databases: MEDLINE, Web of Science, APApsycNet, LILACS, and CINAHL, with no date or language restrictions.

### Types of study to be included

We will include only quantitative studies with observational designs (longitudinal or cross-sectional).

### Condition or domain being studied

Depression or depressive symptoms.

### Participants/population

Inclusion: Working women.

Exclusion: Transgender population; sex workers; articles about motherhood and work.

### Intervention(s), exposure(s)

In this study, exposures to sexism in the workplace in the forms of sexual and gender harassment, payment inequalities, and slower career progression were assessed. We included any evaluation of these exposures once the authors stated clearly in the study that these data were related to workplaces.

Examples include questionnaires to identify sexual harassment/assault, self-reports of sexual harassment/assault or victimization by gender prejudice in the workplace, sociodemographic surveys that include salary questions and compare men's to women's incomes, difficulties in the access to job promotions due to the applicant's gender and other reports of exposure to the subjects of interest.

### Comparator(s)/control

Working men. For the specific matter of sexual harassment in the workplace, we also considered men exposed to sexual harassment and assault during work intending to identify differences in the prevalence of exposure to this kind of violence between men and women and to compare the outcomes according to gender.

### Main outcome(s)

The primary outcome of this review is depression/depressive symptoms, that were assessed by scales/questionnaires, clinicians' and psychiatric structured interviews, or self-report.

### \* Measures of effect

Establishing the long-lasting effects of exposure to sexism in the workplace.

### Additional outcome(s)

Other psychiatric disorders such as PTSD and anxiety assessed by scales/questionnaires, medical and psychiatric structured interviews, or self-report. These data only will be collected if the study has evaluated depression.

### \* Measures of effect

Establishing the long-lasting effects of exposure to sexism in the workplace.

### Data extraction (selection and coding)

One reviewer carried out the selection by title and abstract of all retrieved articles, excluding only those that clearly did not match the inclusion criteria (e.g., studies of sexual harassment in college students). Then, two reviewers performed the full reading of all non-excluded articles independently. They made their notes, and disagreements were solved by comparison of opinions and consultation of the written materials (article and notes) until consensus. The whole process was recorded in Microsoft Excel spreadsheets.

We intend to extract the following information of the articles: type of study, year of the study/publication, number of participants, type of sexism investigated in the workplace, means of assessment of the variables of interest (e.g., scale/questionnaire - which ones), means of evaluation of the outcome of interest - depression (e.g., scale/questionnaire - which ones) and main findings (e.g., sexual harassment in the workplace increased depressive symptoms). The data extraction will be performed independently in a Microsoft Excel spreadsheet by the primary reviewer and checked by the second reviewer.

### Risk of bias (quality) assessment

Assessment of the risk of bias will be performed in all studies included in the review using SIGN's checklists. These checklists have sessions to evaluate internal validity and overall assessment, regarding sampling and participants selection, adequacy of assessment of the outcomes of interest, report of confounding factors, statistical analysis, and the possibility of generalization of findings. The primary reviewer will fill in the proper version of the checklist for each study, and the results will be reported and discussed in the final version of the review. Still, no exclusion of selected papers will be done based on assessment of bias.

### Strategy for data synthesis

Studies will be separated by type of exposure (since there are different exposures of interest). From that, we will proceed to a qualitative synthesis comparing the similarities and differences in methods and findings, trying to clarify what are the most consistent relations. Because few studies (and no systematic review) have addressed the issue of sexism in the workplace as a risk factor for depression in working women in a standardized way, we chose to make this review broad to combine and to compare the most outstanding findings in this field. Because data summarization via metaanalysis requires considerably uniform methods, we believe it will not be possible to apply this method to our study design, but if data allows, we intend to accomplish that.

### Analysis of subgroups or subsets

There will be four different subgroups as a result of the different exposures of interest: women exposed to sexual harassment, payment inequality, difficulties in career progression, and gender harassment/gender prejudice in the workplace. From our point of view, it is essential to divide our sample according to the type of sexism evaluated to assess the effects of these different types of workplace discrimination separately, and whether there are differences in their impact on women's mental health.

#### Contact details for further information

Natalia Maria Simionato  
simionatonatalia@gmail.com

#### Organisational affiliation of the review

Universidade Federal de Sao Paulo (UNIFESP)  
<https://www.unifesp.br/>

#### Review team members and their organisational affiliations

Ms Natalia Maria Simionato. Universidade Federal de Sao Paulo (UNIFESP)  
Assistant/Associate Professor Deborah Suchecki. Universidade Federal de Sao Paulo (UNIFESP)  
Mrs Priscila Brandi Gomes Godoy. Universidade de Sao Paulo

#### Type and method of review

Systematic review

#### Anticipated or actual start date

05 November 2018

#### Anticipated completion date

30 June 2020

#### Funding sources/sponsors

This review has not been funded.

#### Conflicts of interest

#### Language

English, Portuguese-Brazil, Portuguese-Local, Spanish

#### Country

Brazil

#### Stage of review

Review Ongoing

#### Subject index terms status

Subject indexing assigned by CRD

#### Subject index terms

MeSH headings have not been applied to this record

#### Date of registration in PROSPERO

28 April 2020

#### Date of first submission

10 February 2020

#### Details of any existing review of the same topic by the same authors

Not applicable.

#### Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	Yes
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

*The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.*

*The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.*

#### Versions

28 April 2020

#### PROSPERO

This information has been provided by the named contact for this review. CRD has accepted this information in good faith and registered the review in PROSPERO. The registrant confirms that the information supplied for this submission is accurate and complete. CRD bears no responsibility or liability for the content of this registration record, any associated files or external websites.



## Appendix 3 – Newcastle-Ottawa Scale

### NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE CASE CONTROL STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Exposure categories. A maximum of two stars can be given for Comparability.

#### Selection

- 1) Is the case definition adequate?
  - a) yes, with independent validation \*
  - b) yes, eg record linkage or based on self reports
  - c) no description
- 2) Representativeness of the cases
  - a) consecutive or obviously representative series of cases \*
  - b) potential for selection biases or not stated
- 3) Selection of Controls
  - a) community controls \*
  - b) hospital controls
  - c) no description
- 4) Definition of Controls
  - a) no history of disease (endpoint) \*
  - b) no description of source

#### Comparability

- 1) Comparability of cases and controls on the basis of the design or analysis
  - a) study controls for \_\_\_\_\_ (Select the most important factor.) \*
  - b) study controls for any additional factor \* (This criteria could be modified to indicate specific control for a second important factor.)

#### Exposure

- 1) Ascertainment of exposure
  - a) secure record (eg surgical records) \*
  - b) structured interview where blind to case/control status \*
  - c) interview not blinded to case/control status
  - d) written self report or medical record only
  - e) no description
- 2) Same method of ascertainment for cases and controls
  - a) yes \*
  - b) no
- 3) Non-Response rate
  - a) same rate for both groups \*
  - b) non respondents described
  - c) rate different and no designation

## NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE COHORT STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

### Selection

- 1) Representativeness of the exposed cohort
  - a) truly representative of the average \_\_\_\_\_ (describe) in the community \*
  - b) somewhat representative of the average \_\_\_\_\_ in the community \*
  - c) selected group of users eg nurses, volunteers
  - d) no description of the derivation of the cohort
- 2) Selection of the non exposed cohort
  - a) drawn from the same community as the exposed cohort \*
  - b) drawn from a different source
  - c) no description of the derivation of the non exposed cohort
- 3) Ascertainment of exposure
  - a) secure record (eg surgical records) \*
  - b) structured interview \*
  - c) written self report
  - d) no description
- 4) Demonstration that outcome of interest was not present at start of study
  - a) yes \*
  - b) no

### Comparability

- 1) Comparability of cohorts on the basis of the design or analysis
  - a) study controls for \_\_\_\_\_ (select the most important factor) \*
  - b) study controls for any additional factor \* (This criteria could be modified to indicate specific control for a second important factor.)

### Outcome

- 1) Assessment of outcome
  - a) independent blind assessment \*
  - b) record linkage \*
  - c) self report
  - d) no description
- 2) Was follow-up long enough for outcomes to occur
  - a) yes (select an adequate follow up period for outcome of interest) \*
  - b) no
- 3) Adequacy of follow up of cohorts
  - a) complete follow up - all subjects accounted for \*
  - b) subjects lost to follow up unlikely to introduce bias - small number lost - > \_\_\_\_ % (select an adequate %) follow up, or description provided of those lost) \*
  - c) follow up rate < \_\_\_\_ % (select an adequate %) and no description of those lost
  - d) no statement

## Appendix 4 – PRISMA Checklist



### PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
<b>TITLE Effects of sexism in the workplace on mental health: a systematic review</b>			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	i
<b>ABSTRACT</b>			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	xv-xvi
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of what is already known.	6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	7-8
<b>METHODS</b>			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	8
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	8-10
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	8
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	8-10
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	10
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	10
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	10-11
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	40-65
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $I^2$ ) for each meta-analysis.	19



## PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	N/A
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
<b>RESULTS</b>			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	9
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	33-65
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	20-22
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	33-65
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	N/A
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
<b>DISCUSSION</b>			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	65-69
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	19-20, 65-69
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	69-70
<b>FUNDING</b>			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	viii

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: [www.prisma-statement.org](http://www.prisma-statement.org).