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Duration of exposure and educational level as predictors of occupational respiratory symptoms among adults in Ethiopia: A systematic review and meta-analysis

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Abstract

Introduction: Occupational respiratory symptoms are manifestations of respiratory diseases because of exposure to dust or chemicals such as asbestos, silicon and aluminium in the workplace like cement factory, tannery, textile and/or street sweeping, all of which affect the health condition and productivity. In Ethiopia, several primary studies were conducted regarding the magnitude of occupational respiratory symptoms with the prevalence of 68.89% in street sweepers and associated factors with inconsistent results. This meta-analysis aimed to pool the prevalence of respiratory symptoms and their associated factors among Ethiopian adults working in different workplaces.

Methods: PubMed, African Journals Online, Google Scholar, Cochrane Library and Direct Google were systematically searched to identify primary studies. Two authors performed data abstraction and quality assessment for each included study independently. Cochran's Q-statistic and I^2 (I-squared) statistic were used to check heterogeneity. DerSimonian and Laird random-effects models were used to estimate the pooled prevalence and associated factors of respiratory symptoms. Publication bias was checked by funnel plot and Egger's test, and also sensitivity analyses were performed.

Results: Ten primary studies with 3441 study participants were included for the narrative synthesis and meta-analysis of the pooled prevalence of occupational respiratory symptoms. The pooled prevalence of overall occupational respiratory symptom was 54.58% (95% CI: 45.37–63.79). Dry cough was the most encountered respiratory symptom [34.93, 95% CI: 29.52–40.35], followed by breathlessness [28.67%, 95% CI: 20.13–37.22]. Work experience of over 5 years [OR = 2.24, 95% CI: 1.21–4.16] and educational level of Grade 8 and lower [OR = 1.28, 95% CI: 1.06–1.55] were significantly associated with occupational respiratory symptoms.

Conclusion: In this review, the pooled prevalence of occupational respiratory symptoms was high. The findings of this study dictate the need for the implementation of workplace safety measures. Special attention is required to employees with lower educational level and longer duration of work experience.

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Keywords

Exposure, education, meta-analysis, occupational respiratory symptoms, Ethiopia

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Introduction

Occupational respiratory diseases are caused or exacerbated by inhalation of dust particles or exposure to chemicals or proteins in the workplace.[1,2] The chemicals released from the workplace which contributed to respiratory diseases include asbestos, silicon, aluminium, beryllium, iron oxide, barium sulphate and tin oxide.[3] Respiratory diseases are characterized by dry cough, phlegm, wheezing, chest tightness and breathing difficulties.[4] As reported in studies conducted on exposure to organic dust, the pathogenesis of an occupational respiratory disease is partly by the interaction of dust particles

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with antibodies in the respiratory lining that results in immune response from which asthma (most common respiratory disease), chronic obstructive pulmonary diseases, silicosis or pulmonary arterial hypertension can be developed.[5,6] Nevertheless, occupational respiratory disease is preventable,[7] and if left untreated, it exerts huge health effects and reduces productivity that leads to negative economic consequences.[8]

Though the development of the industry sector is claimed for the occurrence of occupational respiratory disease in developed countries,[9] it is also common in low- and middle-income countries because of limited knowledge and practice of employees on its prevention and impacts.[10] The prevalence of respiratory symptoms varies from country to country and from exposure to exposure. The overall occupational respiratory symptom is 34% in rice mill workers in Bangladesh,[11] 53% among carpenters in Iran[12] and 21.1% among cement factory workers in Eastern Nepal.[13] It is also common in Africa as observed in Cameroon woodworkers (51%)[14] and Nigeria (40.7%, dry cough).[15] In Ethiopia, there is the transformation of agriculture to the industry, which demanded many workforces that could increase occupational respiratory symptoms in Ethiopia. The prevalence of occupational respiratory symptoms ranges from 27.09% (Tannery workers)[16] to 68.89% (street sweepers)[17] in Ethiopia. To the extent of our knowledge, there is no comprehensive national study on this topic in Ethiopia. Therefore, we conducted this meta-analysis to fill the above-mentioned lacunae and planned to consolidate the prevalence of overall occupational respiratory symptoms and its association with sex, educational level and duration of exposure among adults. Factories can use the findings of this study as evidence to understand the extent of the problem and to tailor preventive measures to the modifiable risk factors to ensure workplace safety.

Methods

Reporting system and registration

We used primary studies that reported the prevalence and/or proportion of occupational respiratory symptoms and/or at least one associated factor among adults in Ethiopia. Fundamental principles of the Centre for Reviews and Dissemination's (CRD) guidance for undertaking reviews in health care[18] were employed to conduct this review and reported using Preferred Reporting Items for Systematic Review and Meta-Analysis guideline (PRISMA).[19] It was registered at the Protocols at the International Prospective Register of Systematic Reviews (PROSPERO: CRD42020176826) available at https://www.crd.york.ac.uk/Prospero.[20]

Inclusion criteria

We included all observational primary studies (without restrictions to study period and sample size, published and unpublished) among different workers exposed to dust in Ethiopia and its provinces (regions) until 28 March 2020, which were written in the English language. There were no studies written by other Ethiopian languages than English. Records lacking abstract and/ or full text after at least two email contacts with the primary authors, unidentified reports, editorials, letters to the editor, communications, case reports, case series and qualitative studies were excluded. Besides, studies conducted on a specific population (only males or females) were excluded because the prevalence of respiratory symptoms only on males cannot represent the magnitude in females and vice versa.

Data sources and searching strategies

We searched PubMed, African Journals Online, Google Scholar and Direct Google search to access primary studies relevant to our plan. The searching strategy hinged on the principle of CoCoPo (Condition, Context and Population) to decide on all key components before starting the actual review process. The basic search terms and phrases were 'occupation', 'respiratory symptoms', 'pulmonary symptoms' and Ethiopia. The listed search terms were got by using MeSH (Medical subject heading) browser. We built-in advanced search by a combination of MeSH terms describing respiratory symptoms among exposed workers to occupational dust using Boolean Operators (AND/OR) as title, title/abstract and keywords. Database searching for PubMed was 'Respiratory'(Title/Abstract) OR 'pulmonary' (Title/Abstract) AND 'symptoms' (Title/Abstract) AND 'occupational' (Title/Abstract)) OR 'exposure'(Title/Abstract) AND 'Ethiopia'(Title/Abstract). The combination of MeSH terms using Boolean operators is based on the recommendations to conduct a literature search.[21] Likewise, the authors retrieved a few relevant articles by searching the reference lists of other included studies that might have been omitted during electronic database searching. To account for potential publication bias, we included grey literature (unpublished studies) all of which were retrieved from the institutional repository of Addis Ababa University.

Selection of studies, quality assessment, and data abstraction

Duplicates were eliminated using Endnote X7. We screened the articles based on title, abstract and then full-text review. Most inconsistencies during the selection of studies were solved by consensus after thorough discussion (Figure 1). All authors independently appraised the quality status of each included study using Hoy et al. quality assessment tool, which can discourse both the internal and external validity. The tool has nine risks of bias items (each comprising '0' or '1' risk of bias levels) with a maximum score of nine and a minimum score of zero. The overall risk of bias comprised three categories, namely; low risk (high quality) (0–3), moderate risk (moderate quality) (4–6) and high risk (low

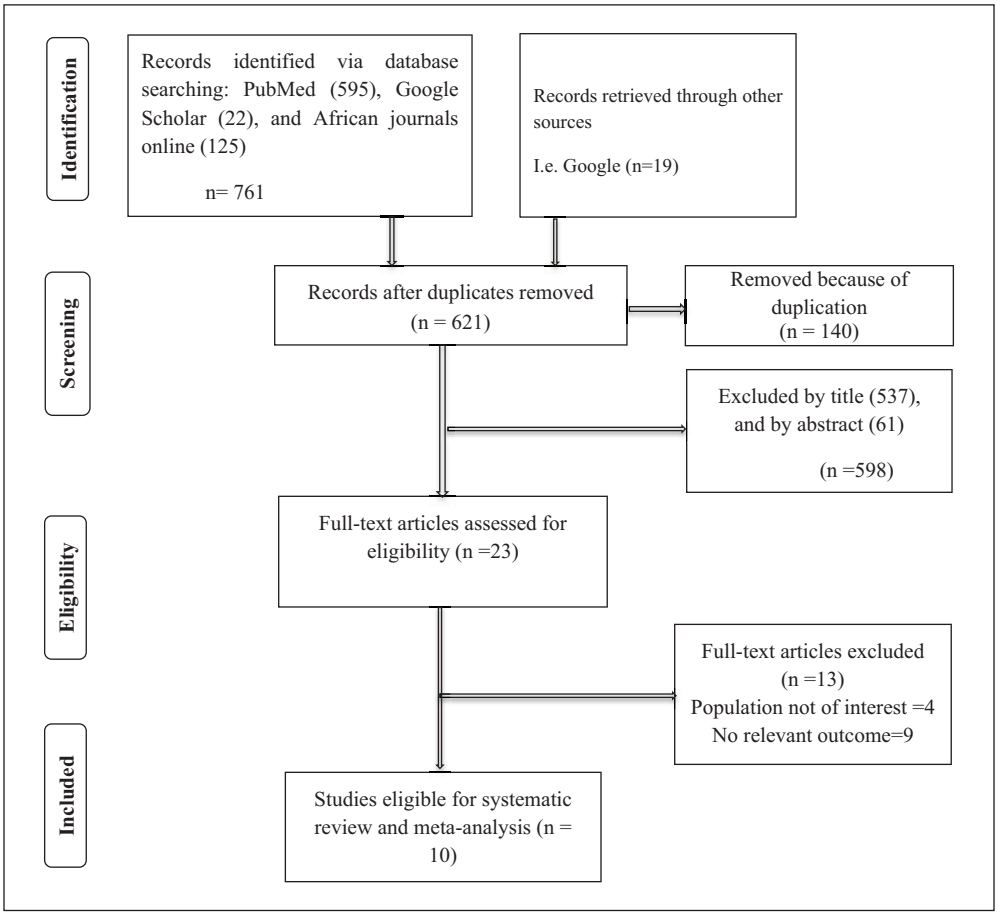

Figure 1. The PRISMA flow diagram showing the multiple steps of relevant study selection for the systematic review and meta-analysis of occupational respiratory symptoms in Ethiopia.

quality) (7–9). Conflicts during rating the risk of bias were harmonized. The Hoy et al. risk of the bias assessment tool consists of nine components: (1) Was the study's target population a close representation of the national population in relation to relevant variables, for example, age, sex, occupation? (2) Was the sampling frame a true or close representation of the target population? (3) Was some form of random selection used to select the sample, OR, was a census undertaken? (4) Was the likelihood of non-response bias minimal? (5) Were data collected directly from the subjects (as opposed to a proxy)? (6) Was an acceptable case definition used in the study? (7) Was the study instrument that measured the parameter of interest (e.g. prevalence of low back pain) shown to have reliability and validity (if necessary)? (8) Was the same mode of data collection used for all subjects? (9) Were the numerator(s) and denominator(s) for the parameter of interest appropriate?

We used a Microsoft Excel spreadsheet to extract data on the name of the first author, year of publication (year of study for unpublished studies), study design, study area (region), sample size, type of occupation, prevalent cases to the overall respiratory symptom, prevalent cases to each respiratory symptom (cough, phlegm, wheezing, breathlessness and chest tightness) and independent factors (sex, work experience and educational level).

Reliability

Two reviewers, assigned blindly to each other, performed the selection of studies, data extraction and risk of bias assessment. The two authors harmonized their divergences of the verdict, and then the third author involved in unresolved conflicts between the two authors.

Statistical analysis

We used Stata 11 for meta-analysis. Heterogeneity was assessed using Cochran's Q-statistic and I-squared statistics whereby I^2 values 25%, 50% and 75% signify low, moderate and high heterogeneity, respectively.[22] To deal with inter-study variation, the main meta-analysis was executed using the DerSimonian and Laird (D and L) random-effects model.[23] Besides, we performed subgroup analysis by study region, publication status, type of occupation and the instrument used to measure the outcome variables. The authors tested publication bias using Egger's test and funnel plot.

Table 1. Characteristics and quality status of the primary studies for this systematic review and meta-analysis.

Author	Year	Study area/ region	Study design	Type of occupation	Sample size	Quality status	Quality score
Gizaw et al.[28]	2016	Amhara	Cross-sectional	Cement factory	404	High quality	1
Siyoum et al.[30]	2014	Oromia	Cross-sectional	Cement factory	266	High quality	2
Daba Wami et al.[25]	2018	Amhara	Cross-sectional	Textile factory	270	High quality	2
Dalju et al.[16]	2019	Oromia	Cross-sectional	Tannery	299	High quality	1
Wubet[31]	2017[a]	Addis Ababa	Cross-sectional	Street sweeping	566	High quality	1
Abraha[17]	2017	Addis Ababa	Cross-sectional	Street sweeping	405	High quality	1
Emiru et al.[26]	2017	Addis Ababa	Cross-sectional	Street sweeping	518	High quality	2
Mekasha et al.[29]	2018	Oromia	Cross-sectional	Cement factory	309	High quality	2
Ashuro[24]	2018[a]	SNNP	Cross-sectional	Flour mill	196	High quality	2
Beyene[27]	2016[a]	Addis Ababa	Cross-sectional	Street sweeping	208	High quality	1

SNNP: Southern Nations, Nationalities, and Peoples.
[a]Studies not published, but the year shows the study conduction period.

The influence of a single study on the overall estimate was evaluated by sensitivity analysis. Point prevalence (effect size), as well as 95% confidence interval (CI), was presented by the forest plot. For the second outcome, an odds ratio with 95% CI was used to determine the association between independent factors and occupational respiratory symptoms.

Results

The review process and characteristics of the primary studies

Ten primary studies[16,17,24–31] with 3441 study participants (male = 1983, female = 1458, age range: 18–68 years) were included for the narrative synthesis and meta-analysis. Three studies were unpublished [24,27,31] and seven studies were published from 2014 to 2019.[16,17,25,26,28–30] The sample size ranged from 196[24] to 566.[31] Four studies were conducted in Addis Ababa,[17,26,27,31] three studies in Oromia Region,[16,29,30] two studies in Amhara region[25,28] and one study in the Southern Nations, Nationalities, and Peoples (SNNP) region.[24] The risk level of each study was rated, and we found all studies were rated as low risk of bias (Table 1).

Ten studies were eligible for the meta-analysis of dry cough and phlegm,[16,17,24–31] nine studies for wheezing and breathlessness[16,17,24,26–31] and eight studies for chest tightness[16,17,24–28,30] (Table 3). Seven studies were eligible for pooling of odds ratio for the association of occupational respiratory symptoms with work experience (duration of service in that factory),[16,17,24,25,27,28,31] eight studies for educational level[16,17,24,25,27,28,30,31] and nine studies for sex[16,17,24–28,30,31] (Figures 5–7).

The pooled prevalence of occupational respiratory symptoms in Ethiopia

Remarkable inter-study heterogeneity, other than chance was observed during meta-analysis using the fixed-effects model [I^2 = 96.9%, p = 0.00]. To handle the existence of this heterogeneity, we performed the main meta-analysis using D and L random-effects model to determine the pooled prevalence of overall occupational respiratory symptoms. Ten studies were eligible for estimating the pooled prevalence of overall occupational respiratory symptoms. After running the main meta-analysis using the D and L random-effects model, the pooled prevalence of overall occupational respiratory symptoms was 54.58% (95% CI: 45.37–63.79) with significant heterogeneity between studies (I^2 = 96.9, p < 0.001) (Figure 2).

Subgroup analysis

Subgroup analysis was performed by study region, occupation publication status and the instrument used to measure the outcome variable. After performing subgroup analysis by occupation, the pooled prevalence of overall occupational respiratory symptoms was 59.98% among cement factory workers and 58.6% among street sweepers. Regional subgroup analysis publicized 58.61% pooled prevalence of occupational respiratory symptoms in Addis Ababa, 47.99% in the Oromia Region and 55.44% in the Amhara region. Primary studies that applied the American Thoracic Society (ATS) tool to measure the outcome variable reported 62.32% and 46.97% by studies using the British Medical Research Council (BMRC). The pooled prevalence of occupational respiratory symptoms was 52.05% [95% CI: 40.52–63.57] in published studies, and it was 60.72% [95% CI: 49.54–71.90] in unpublished studies (Table 2).

Components of occupational respiratory symptoms

The pooled prevalence of specific symptoms was analysed using D and L random-effects model. The most common respiratory symptom was dry cough (34.93 (95% CI: 29.52–40.35)), followed by breathlessness (28.67% (95% CI: 20.13–37.22)). The pooled prevalence of phlegm, wheezing and chest tightness were 27.88% (95% CI: 22.09–33.67),

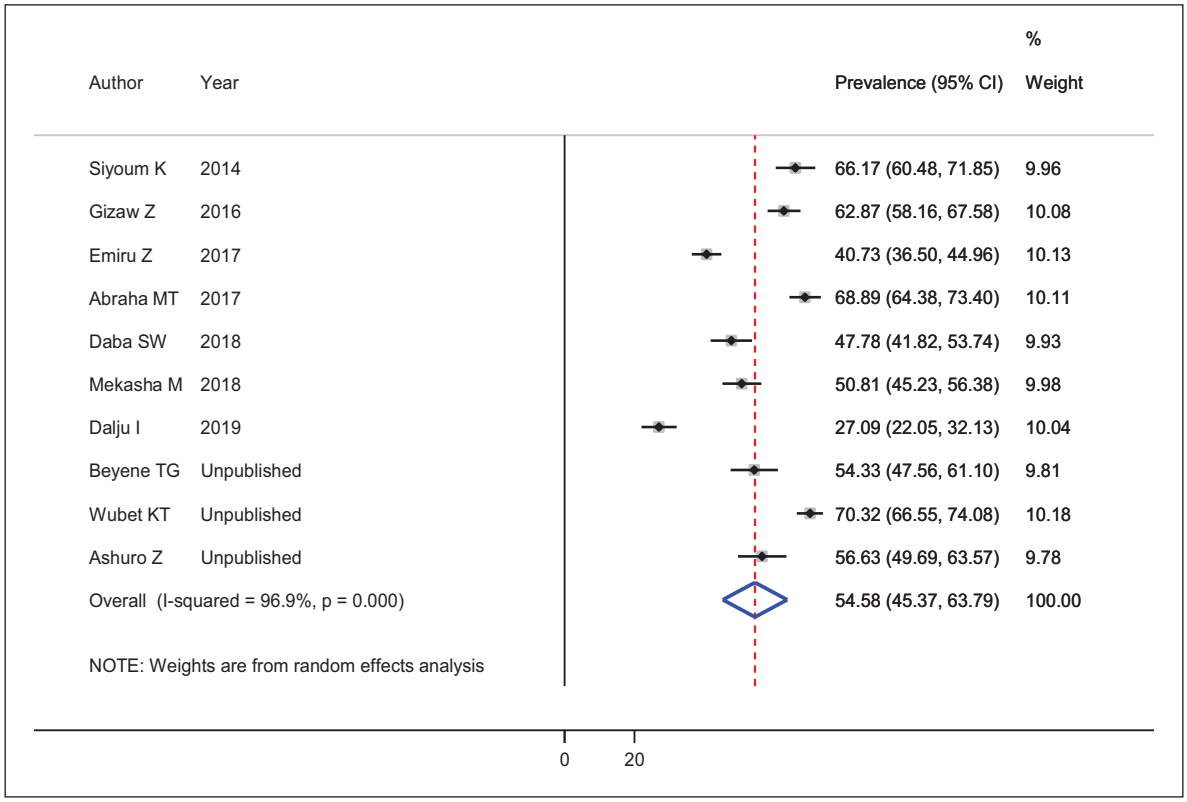

Figure 2. Forest plot depicting estimated pooled prevalence of occupational respiratory symptoms in Ethiopia.

Table 2. Subgroup analysis for the pooled prevalence of occupational respiratory symptoms in Ethiopia.

Variables	Characteristics	D + L pooled estimate with 95% CI	Number of studies	Participants	Degree of freedom (n − 1)	I^2 (p value)
By occupation	Street sweepers	58.61 [43.66–73.55]	4	1697	3	97.6% (<0.001)
	Cement factory	59.98 [51.20–68.75]	3	979	2	87.8% (<0.001)
	Textile factory	47.78 [41.82–53.74]	1	270	0	–
	Tannery	27.09 [22.05–32.128]	1	299	0	–
	Flour mill	56.63 [49.69–63.57]	1	196	0	–
By region	Addis Ababa	58.61 [43.66–73.55]	4	1697	3	97.6% (<0.001)
	Oromia	47.99 [25.26–70.72]	3	874	2	98.1% (<0.001)
	Amhara	55.44 [40.65–70.23]	2	674	1	93.4% (<0.001)
	SNNP	56.63 [49.69–63.57]	1	196	0	–
By instrument	BMRC	46.97 [34.25–59.68]	5	1687	4	96.6% (<0.001)
	ATS	62.32 [54.70–69.94]	5	1754	4	91.1% (<0.001)
By publication status	Published	52.05 [40.52–63.57]	7	3037	6	97.3% (<0.001)
	Unpublished	60.72 [49.54–71.90]	3	404	2	91.2% (<0.001)

ATS: American Thoracic Society; BMRC: British Medical research council; D + L: DerSimonian and Laird; n: observations (number of studies); SNNP: Southern Nations, Nationalities, and Peoples.

22.14 (95% CI: 16.87–27.40), and 17.05% (95% CI: 10.00–24.097), respectively (Table 3).

Publication bias

The symmetrical distribution of included studies by the funnel plot showed the absence of publication bias (Figure 3). Furthermore, Egger's test was executed with an estimated bias coefficient of −0.1 (p = 0.650) (Supplementary material 1). The test, thus, shows no evidence of a small-study effect.

Sensitivity analysis

We performed a sensitivity analysis by omitting one study at a time to assess its effect on the pooled prevalence of the combined outcome. The pooled prevalence for each omitted

Table 3. The pooled estimate of individual occupational respiratory symptoms in Ethiopia.

Specific symptoms	Number of included studies	Sample size	Number of cases having the specific symptom	EPP using the random-effects model (ES with 95% CI)	Heterogeneity (I^2) (p value)
Dry cough	10	3441	1182	34.93 [29.52–40.35]	91.6% (<0.001)
Phlegm	10	3441	997	27.88 [22.09–33.67]	93.5% (<0.001)
Wheezing	9	3171	711	22.14 [16.87–27.40]	92.9% (<0.001)
Breathlessness	9	3132	997	28.67 [20.13–37.22]	96.8% (<0.001)
Chest tightness	8	2566	431	17.05 [9.998–24.097]	97.0% (<0.001)

CI: confidence interval; EPP: Estimated pooled prevalence; ES: Effect size; I^2: I-squared.

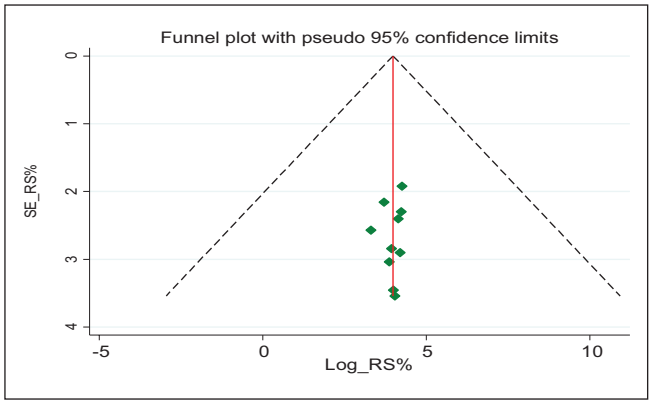

Figure 3. Funnel plot to check publication bias for pooled prevalence of overall respiratory symptoms.

study lied within the estimated interval of overall respiratory symptom. Therefore, there was no significant influence of a single study on the overall occupational respiratory symptoms (Figure 4).

Associated factors of occupational respiratory symptoms

We performed a meta-analysis to identify associated factors of occupational respiratory symptoms using the random-effects model. During the extraction process, we planned to show the association of every factor with the outcome variable. However, we could not check for the association of each factor with the respiratory symptom because factors listed in one study were not found in others and the differences in categorization of the predictor variables in each primary study. Therefore, we performed the pooled effect of three factors on the outcome variable, that is, sex, educational level and work experience (duration of service) at the factory. Seven studies were eligible for pooling the odds ratio for the association of work experience with occupational respiratory symptoms, eight studies for educational level and nine studies for sex of the participants.

The pooled effect of acquiring occupational respiratory symptoms among participants with work experience above 5 years was 2.24 times (Pooled OR = 2.24, 95% CI: 1.21–4.16) higher than those participants working for 5 years and below in that occupation (Figure 5). The odds of having occupational respiratory symptoms were 1.28-fold (Pooled OR = 1.28, 95% CI: 1.06–1.55) in those who attended primary education (Grade 8 and lower) than those who attended secondary education and above (Figure 6). The pooled odds ratio for sex showed that sex was not significantly associated with occupational respiratory symptoms (Figure 7).

Discussion

The current systematic review and meta-analysis aimed to analyse the pooled prevalence of overall occupational respiratory symptoms and their associated factors in Ethiopia. Efforts were made to compare our results with preceding studies. Nonetheless, country-level studies were not available to allow direct comparison with our results comprehensively. To account for this, we used pocket studies in different countries as a comparator to our findings. In this meta-analysis, we found a higher percentage of workers with respiratory symptoms which is in line with other studies in Cameroon conducted among woodworkers (51%),[14] carpenters in Iran (53%)[12] and France.[32] Conversely, the current review reported a higher pooled prevalence than other studies conducted on cement factory workers in Eastern Nepal (21.1%),[13] workplace smokers in Hong Kong (27.2%)[33] and rice mill workers in Bangladesh (34%).[11] This difference might be attributed to the differences in the occupation in that our study combines the prevalence from different work exposures and others listed above were conducted on a single occupation which might lower the prevalence. On the other hand, community education and socioeconomic status in Ethiopia are lower that might reduce the workers' knowledge and practice to implement preventive measures for protecting them from occupational respiratory problems. The impact of wealth on respiratory problems was studied in England that illustrates a lower prevalence of respiratory diseases were found among people from wealthy areas.[34] Subgroup analysis of occupational respiratory symptoms showed a higher percentage of occupational respiratory symptoms among cement factory workers. This might be because cement workers are more exposed to dust particles, and the chemicals released are more dangerous. Besides, the overall respiratory symptom was higher among studies in Addis Ababa. This might be ascribed to the longer duration

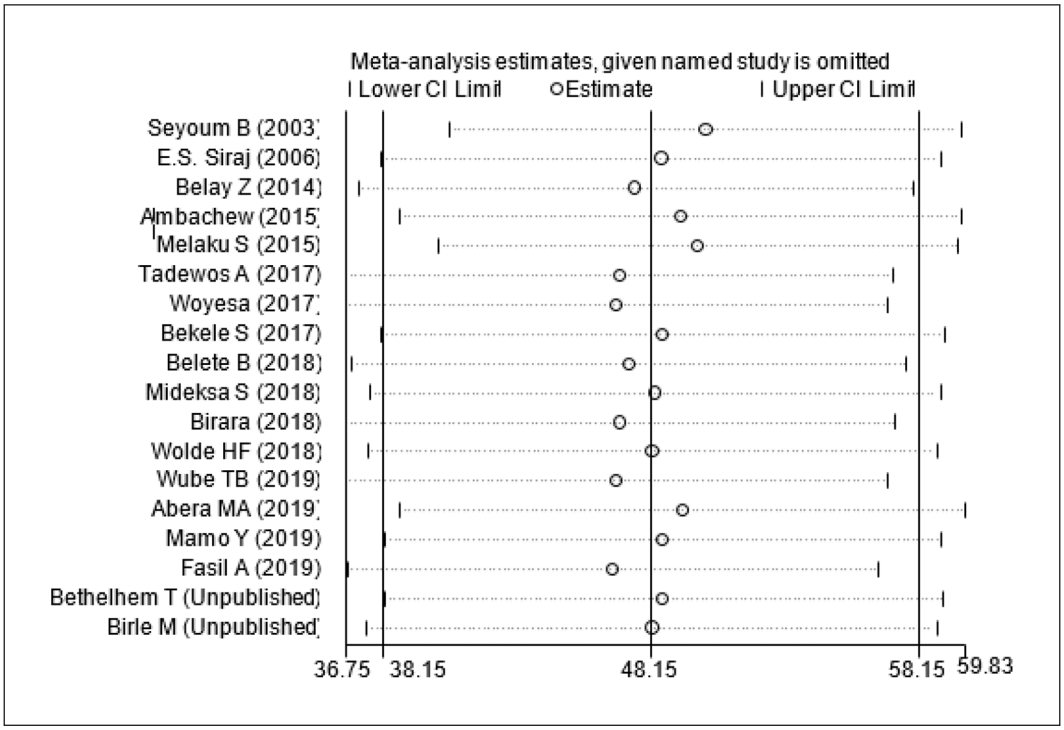

Figure 4. Sensitivity analysis of included studies for the influence of one study on the overall estimate.

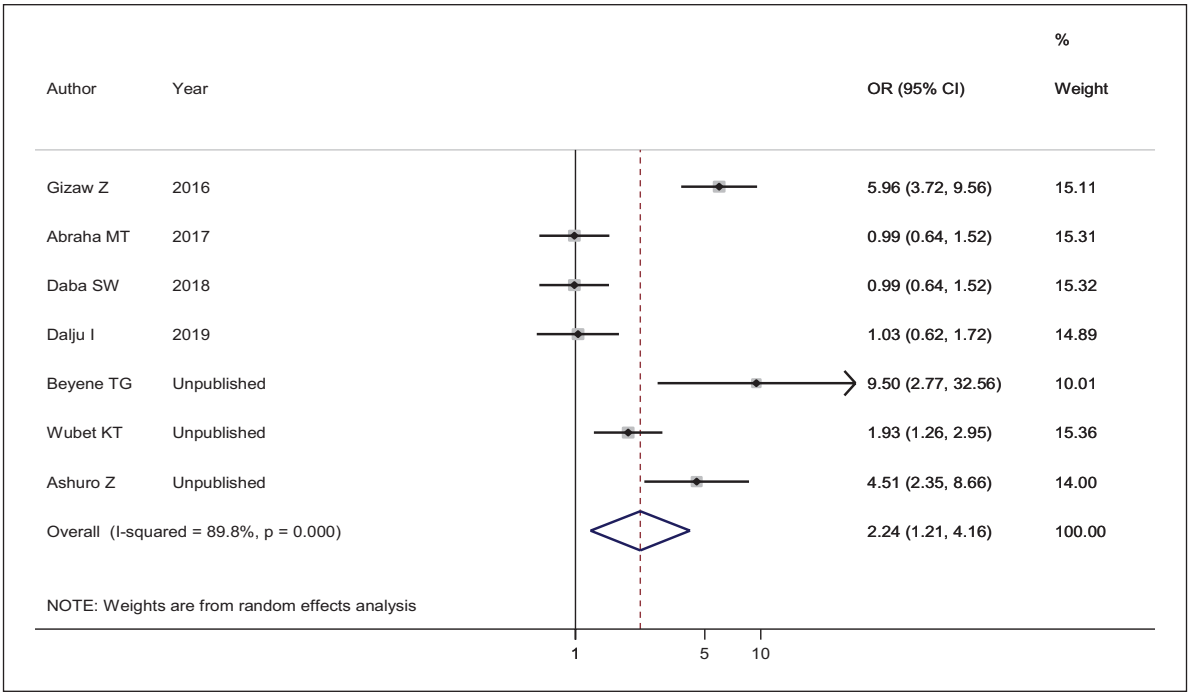

Figure 5. Forest plot to indicate association of occupational respiratory symptoms with work experience.

of exposure to the chemicals and the mix up of different chemicals from various industries in the town because Addis Ababa is the centre for most factories.

A dry cough is the highest of all respiratory symptoms in our study. This is like another study in Iran (34.4%)[12] and the United Arab Emirates (29.9%).[35] However, the pooled prevalence of dry cough is higher than other findings as shown in Bangladesh (18%),[11] Iran (17%),[36] Tehran (20.7%)[37] and France (8.9%).[38] On the contrary, dry cough in our result is lower than studies conducted in Gujarat (50%),[39] Nigeria

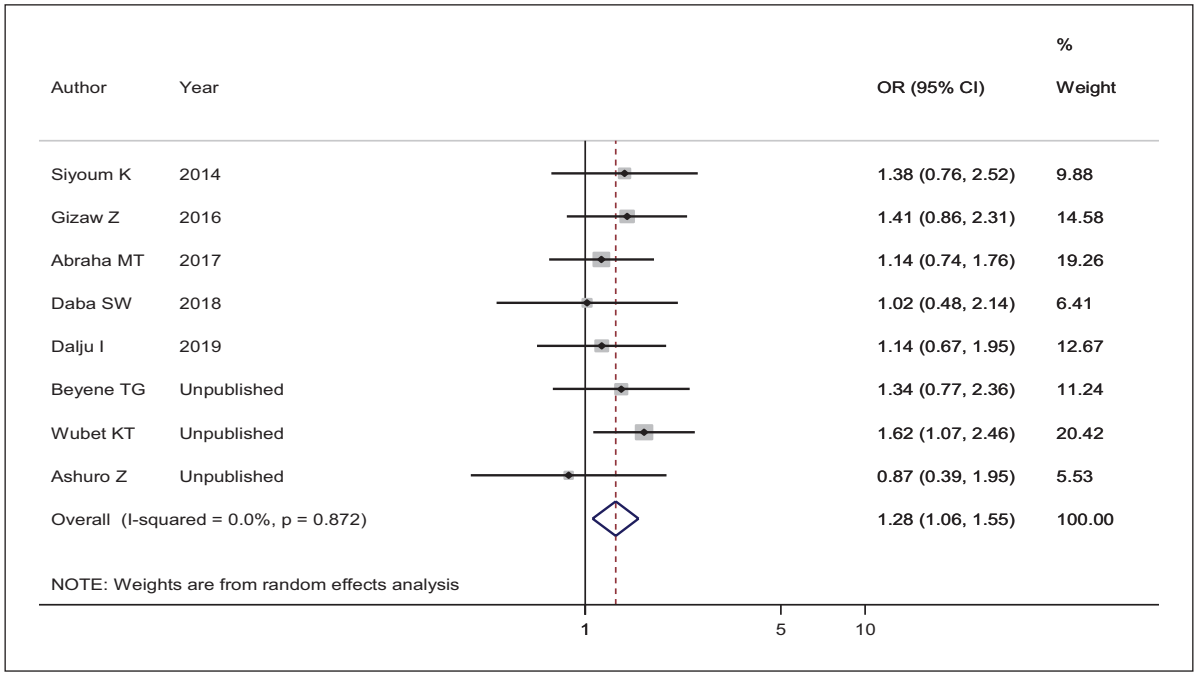

Figure 6. Forest plot to show association of occupational respiratory symptoms with educational status.

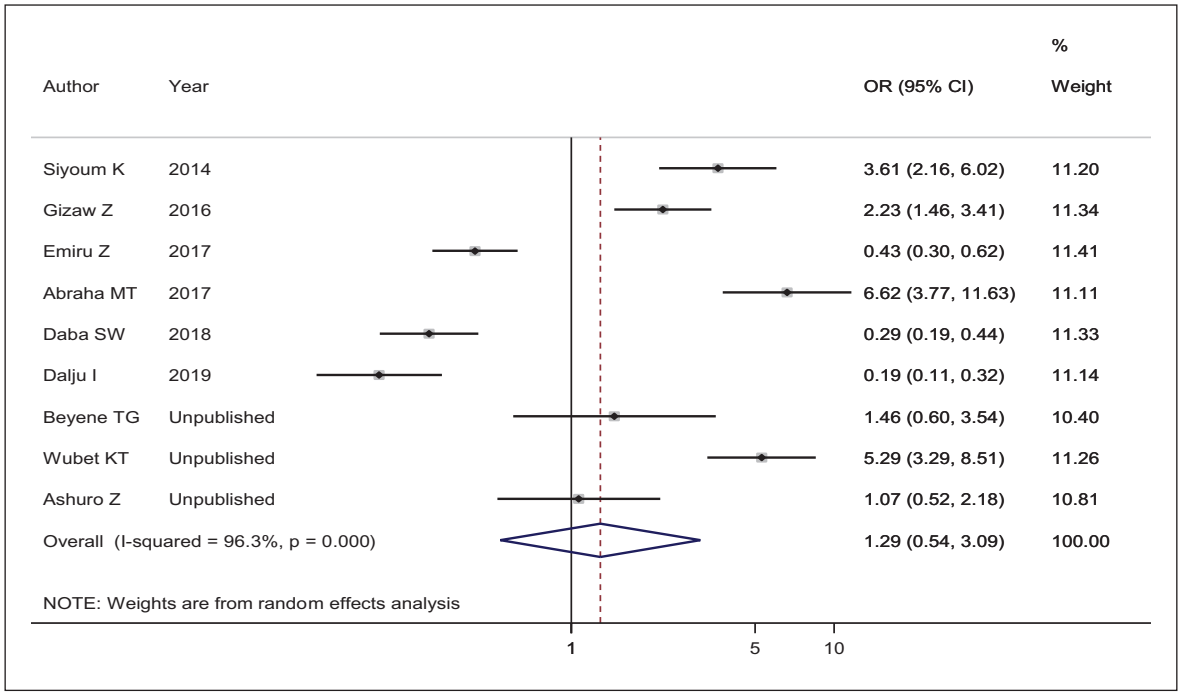

Figure 7. Forest plot to show association of occupational respiratory symptom and sex.

(40.7%)[15] studies in Iran (81% and 43%).[40,41] The inconsistency could be due to sample size, socioeconomic status and methodological differences. The pooled prevalence of phlegm in this meta-analysis is similar to two studies in Iran with a prevalence of 33.3% and 25%, respectively.[12,36] A study in Turkey reported a lower prevalence of phlegm (20.46%)[42] than our finding, which might be explained by the population and cultural differences. However, the prevalence of phlegm in this study was lower than studies in Iran (38% and 38.1%),[40,41] Tehran (41.6%)[37] and Gujarat (45.1%).[39] The difference might be because of sample size, socioeconomic status and exposure level. The prevalence of

breathlessness was similar with a study in South Africa (38%),[43] but lower than studies in Iran (74% and 61.9%),[40,41] Tehran (41.7%)[37] and Gujarat (40%).[39] However, it was higher than other studies in Bangladesh (10%),[11] Iran (6.7%),[36] Italy (11%)[44] and Nigeria (6.5%).[15] The pooled prevalence of wheezing was lower than studies in Iran (37% and 66.7%),[40,41] and Gujarat (60%).[39] On the other hand, the estimate of wheezing was higher than other studies in Iran (15.15% and 14.5%),[12,36] Australia (23%),[45] Bangladesh (5.8%),[11] Nigeria (5.2%)[15] and France (16%).[38] Last, the pooled prevalence of chest tightness is lower than other studies in Iran (27%),[41] Tehran (27.4%)[37] and Nigeria (47.6%).[15] The differences between our study results and other studies could be attributed to the variations in sample size, economic status, training about workplace safety, level of dust or chemical exposure, nature of the workplace and other environmental factors.

Primary education was associated with higher odds of occupational respiratory symptoms. Other studies supported similar findings.[46–48] This might be because a person with a lower education level would have inadequate knowledge about occupational safety to allow better protection of the health condition [49,50].

The odds of getting respiratory symptoms were higher among employees who had over 5 years of work experience (duration of work/service) than the references. This is supported by other studies where prolonged work experience is associated with a higher percent of occupational respiratory symptoms.[39,51–56] This might be because as work experience is longer, the duration of dust exposure is higher. Long-term exposure to specks of dust or chemicals leads to higher deposition of dust to the respiratory tracts and of chronic inflammation that worsens breathing disorders manifested by different respiratory symptoms.[57,58] A study in Italy showed longer duration of exposure results in a higher prevalence of respiratory symptoms.[59] In this review, sex was not associated with occupational respiratory symptoms. However, there is a study that revealed the association of sex with respiratory symptoms in China[60] and France.[38] The findings of this study suggest the need to implement workplace safety measures for preventing occupational respiratory symptoms as recommended by the Fourth Industrial Revolution.[61]

Limitations of the study

Remarkable inter-study heterogeneity, a few participants (issue of representativeness of samples to the national population) and absence of studies in most regions of the country were the limitations.

Conclusions

The pooled prevalence of occupational respiratory symptoms was high that necessitates the implementation of workplace safety measures and reduction of risk of hazards to the health of employees to improve their health condition. Regular check-up of employees' health has to be considered to find out the possibility of occupational respiratory diseases in potential dust exposed workplace. Special attention has to be paid to those with lower educational level and those with longer work experience. Factories, in collaboration with the government, need to deliver information to employees and tailor preventive measures of workplace safety.

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Authors' contribution

B.D. prepared the protocol for registration in PROSPERO; conceptualized the study; and involved in database searching, data abstraction, statistical analysis, report writing and manuscript drafting. Z.A. and H.D. involved in the screening of primary studies, resolution of conflicts during data extraction, statistical analysis and manuscript write-up. All authors read and approved the final manuscript before submission. D.A.A. and K.A.G. took part in the narrative synthesis, a meta-analysis (pooling the effect size), graphics and interpretation of results. All authors reviewed and approved the final manuscript.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Ethical approval

Not applicable, because it is a meta-analysis of primary studies.

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Availability of data and materials

The dataset and all the relevant files are found at the primary author and can be gained from the authors upon convincing request.

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Supplemental material

Supplemental material for this article is available online.

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