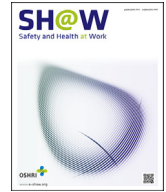




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## Review Article

# Workplace Employees' Annual Physical Checkup and During Hire on the Job to Increase Health-care Awareness Perception to Prevent Disease Risk: A Work for Policy-Implementable Option Globally

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## ABSTRACT

**Background:** Increasing workplace health-care perception has become a major issue in the world. Most of the health-related problems are faced because of the lack of health management instruments. The level of health care can be improved through workplace health well-being regulations. The aim of the present study is to formulate a conceptual model of physical checkup.

**Methods:** This study applied conceptual theories and figures and used secondary data from articles and relevant websites for evaluating the validity of the study.

**Results:** Annual health checkup increases health-care awareness perception of states, organizations, employees, and their families and manages the annual health record of employees, organizations, and states.

**Conclusions:** Health care and awareness perception of states, organizations, employees, and families improves with annual health checkup, and annual health checkup also prevents unhealthy acts.

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## 1. Introduction

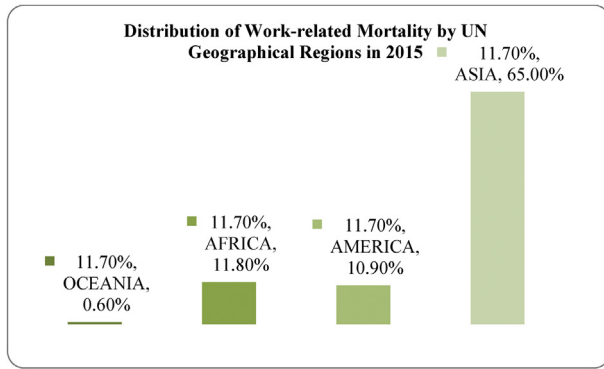
The prevention of occupational diseases [1] has become a serious problem, including social symptoms, worldwide. Massive disease burdens are increasing every year, and they [2] play a disappointing role in both developing and developed countries, which have adjusted million people living there. Globally, two million people die [3] each year as a result of occupational accidents, work-related injuries, and illness. Annually, work-related diseases are estimated to occur in 160 million people [4], and approximately 58 million of them are absent for four workdays in a year. Workplace death, injury, and disease cost (ILO) form approximately 4% of the annual GDP. Workplace accidents and injuries can be controlled [5] with an effective occupational health and safety policy, which states “the health checkup strategy to modify risk factors for the main prevention of ASCVD prevails in the clinical field despite the controversy” [6,7]. The cause-specific death was observed to be reduced in middle-aged men who participated in health checkups [8–10], and workplace is

considered a place that encourages healthy behaviors of employees because employees spend most of their time at the workplace [11,12]. Many governments encourage self-care through the treatment of small illnesses with self-medication [13]. Moreover, encouragement of self-care, also referred to as patient empowerment, includes providing patients the opportunity to take responsibility and build confidence in their ability to manage their own health [14].

A number of studies have been reported on disease burden. It is sensible to consider employees' annual health checkups. Observationally, the growth of work-related diseases is shaping because of the lack of health-care awareness perception by employees and organizations, including workplace regulations. However, the degree of growth of workplace diseases is due to poor care awareness in employees and the organization, including regulations. It can be perceived that health records of employees currently working are not available, and this indicates poor physical checkup for the employee; labor hiring without a physical checkup; labor hiring on a subcontract basis without report from physical checkups;

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Source: [15].

**Fig. 1.** Global highest work-related mortality distribution in five geographical regions in 2015.

employees working with ill health and with the risk of interpersonal diseases, communication diseases, and waterborne diseases; and poor health-care perception by employees themselves, poor health-care perception about relationship (i.e., colleagues, girlfriend-boyfriend, and husband-wife), poor health-care perception by organization, employees, and states, and poor health record of employees, organizations, and states). With this possibility, we assess whether the annual physical checkup maintains the health-care awareness of employees, family lives, and organizations including states, prevents unhealthy acts, and maintains annual health records.

### 1.1. Background of the study

Fig. 1 shows five geographical regions with the highest global work-related mortality in 2015. Work-related mortality in the Oceania is 0.60%; in Africa, 11.80%; in America, 10.90%; and in Asia, 65.00%. Asia has the highest work-related mortality rates in the world and thirds of work-related mortality considering Africa and Europe in the world [15] (Fig. 2).

According to a report on "Global Estimates of Occupational Accidents and Work-related Illnesses 2017" published in 2015, one million workers die at work because of exposure to hazardous substances (Table 2), which is an increase of more than 90,000 workers when compared to the number in 2011. A total of 2.78 million fatalities were reported in 2015 compared to 2.33 million fatalities estimated in 2011. A total of 380,500 deaths due to occupational accidents occurred in 2014, which is an increase of 8%, compared to

**Table 1**  
Breakdown of the estimated fatal work-related mortality by the WHO regions in 2015

Diseases	HIGH	AFRO	AMRO	EMRO	EURO	SEARO	WPRO	TOTAL
Communicable diseases	10,435	84,948	8,152	19,396	4,373	87,511	15,168	229,983
Malignant neoplasms	225,939	37,198	50,038	29,036	56,277	110,662	233,085	742,235
Neuropsychiatric conditions	25,512	3,927	3,390	2,396	1,101	7,280	4,510	48,116
Circulatory diseases	103,863	60,151	48,580	50,597	129,992	246,885	223,105	863,173
Respiratory diseases	51,363	21,419	18,834	27,123	13,714	215,118	128,018	475,589
Digestive diseases	3,132	4,505	2,535	1,546	2,910	8,631	2,655	25,914
Genitourinary diseases	3,840	1,750	1,835	1,167	729	7,214	2,420	18,955
Occupational injuries	10,757	65,145	19,388	21,113	14,159	124,404	125,535	380,500
Total	434,841	279,043	152,752	152,374	223,255	807,705	734,496	2,784,456

Source: [15].

African Region (AFRO = 279,043), America (AMRO = 152,752), Eastern Mediterranean Region (EMRO = 152,374), European Region (EURO = 223,255), South-East Asia Region (SEARO = 807,705), and Western Pacific Region (WPRO = 734,496). Moreover, communicable diseases = 229,983, malignant neoplasms = 742,235, neuropsychiatric conditions = 48,116, circulatory diseases = 863,173, respiratory diseases = 475,589, digestive diseases = 25,914, genitourinary diseases = 18,955, and occupational injuries = 380,500, and overall = 2,784,456 in 2015 (Table 1).

those estimated in 2010. Similarly, in 2015, approximately 2.4 million deaths due to fatal work-related diseases were reported, with an increase of 0.4 million compared to that in 2011. Every day, there are approximately more than 7,500 deaths in total, of which 1,000 result from occupational accidents and 6,500 from work-related diseases. Moreover, the number of nonfatal occupational accidents was estimated to be 374 million, which increases significantly from 2010 [15]. This report shows that the number of occupational diseases, injuries, accidents, and deaths is increasing in the world.

### 1.2. The major problem of the study

The increasing health perception management acknowledged an important content and difficult domain, which links to the different sectors (i.e., corporate sector, policies sector, and human right and economic development) at the individual level. The major problem of this study is how to develop occupational health-care awareness perception management to minimize disease factors in the occupational domain.

### 1.3. The objective of the study

The objectives of this study are listed as follows

- To highlight the important value of occupational annual health checkup of employees when hiring employees on the job.
- To formulate the important factor of annual health checkup during employees' hire on the job to develop health-care perception of employees and organizations to prevent unhealthy acts.
- To suggest and explain the result of validating the purposed conceptual framework of occupational employee annual health checkup during hire on the job.

### 1.4. Study's distinction

The intention of the study is to enlarge health management of employees and the organization including the state to prevent the unhealthy act. It is not any specific state section of the governmental or nongovernmental sector. The comprehensive purpose of study practice is to develop health-care and awareness management at the occupation domain.

### 1.5. The methodology of the study

Two phases were used in the study: The first phase applied conceptual theory and figures, whereas the second phase applied

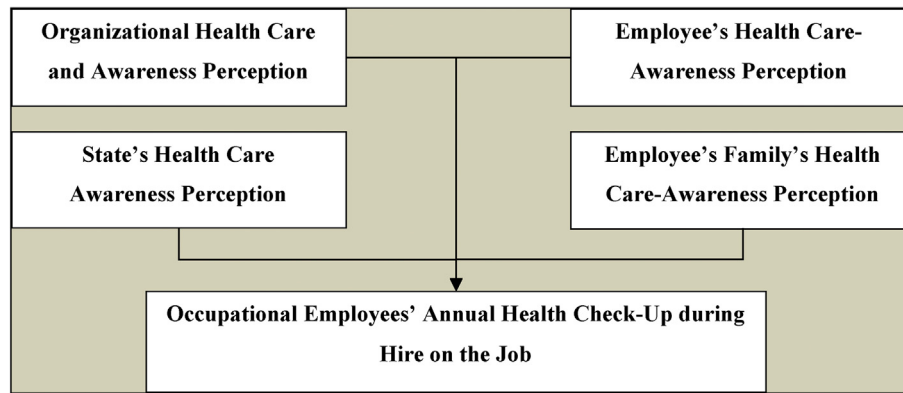


Fig. 2. Model of the study.

secondary data from articles, newspapers, magazines, relevant website, etc. for supporting and defending the conceptual theories and figures.

### 1.6. The conceptual model of the study

A model of the study is presented in Fig. 1.

Four factors of health-care awareness perception develop with occupational employee's annual health report checking during hire on the job.

Hypothesis: The following conceptual hypotheses were developed for managing occupational health-care awareness perception.

**Hypothesis 1-A.** Workplace employees' annual physical checkup during hiring on the job plays a role in developing health-care awareness perception in a state.

**Hypothesis 1-B.** Workplace employees' annual health checkup during hiring on the job plays a role in developing of an organization's health-care awareness perception.

**Hypothesis 1-C.** Workplace employees' annual health checkup during hiring on the job plays a role in developing employees' own health-care awareness perception.

**Hypothesis 1-D.** Workplace employees' annual health checkup during hiring on the job plays a role in developing health-care awareness perception.

### 1.7. State's occupational health-care awareness perception

Occupational health records are not present at all. In this viewpoint, in a state, occupationally, employees' annual health

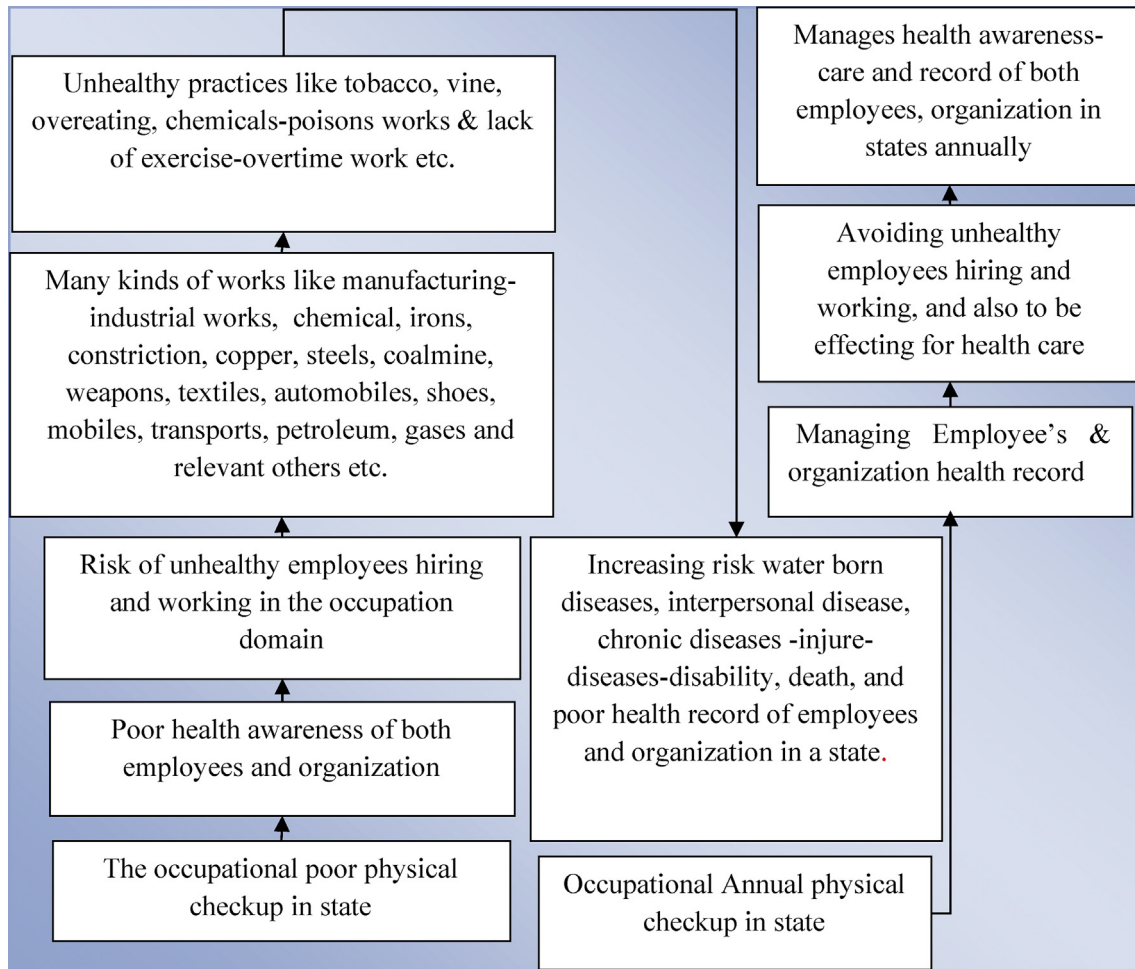
**Table 2**  
Estimated deaths attributed to hazardous substances (including dusts, vapors, and fumes) in 2015

Gender	No. of deaths		Estimated % attributed to hazardous substances		No. of deaths attributed to hazardous substances		
	Men	Women	Men	Women	Men	Women	Total
Cancers	4,779,542	3,754,270	5.3	−5.3	343,646	71,976	415,622
Mouth and oropharyngeal cancers	242,334	96,859	1	0.5	2,423	484	2,908
Esophageal cancer	321,263	136,534	3.3	1.1	10,602	1,502	12,104
Stomach cancer	499,852	292,749	3	0.3	14,996	878	15,874
Colon and rectum cancers	396,370	349,958	1	0.5	3,964	1,750	5,713
Liver cancer	559,329	255,598	0.2	0.1	1,119	256	1,374
Pancreatic cancer	169,105	161,678	0.02	0.01	34	16	50
Trachea, bronchus, and lung cancers	1,113,475	520,462	21.1	5.3	234,943	27,585	262,528
Melanoma and other skin cancers	54,769	40,412	10	2	5,477	808	6,285
Breast cancer	0	558,514	—	4.6	0	25,692	25,692
Cervix uteri cancer	0	306,319	—	0.7	0	2,144	2,144
Ovarian cancer	0	161,181	—	0.5	0	806	806
Prostate cancer	328,131	0	1	—	3,281	0	3,281
Bladder cancer	143,275	47,731	7.1	1.9	10,173	907	11,079
Leukemia	136,879	109,581	0.9	0.5	1,232	548	1,780
Other malignant neoplasms	814,759	716,693	6.8	1.2	55,404	8,600	64,004
Neuropsychiatric conditions	82,630	75,083	1	1	826	751	1,577
Cardiovascular diseases	4,366,727	3,497,981	1	1	43,667	34,980	78,647
Respiratory diseases	2,259,742	1,867,406	—	—	362,910	112,679	475,589
Chronic obstructive pulmonary disease	1,740,463	1,443,292	18	6	313,283	86,598	399,881
Asthma	222,168	182,004	21	13	46,655	23,660	70,316
Other respiratory diseases	297,112	242,110	1	1	2,971	2,421	5,392
Genitourinary diseases	561,351	526,893	1	1	5,614	5,269	10,882
Total					756,663	225,654	982,317

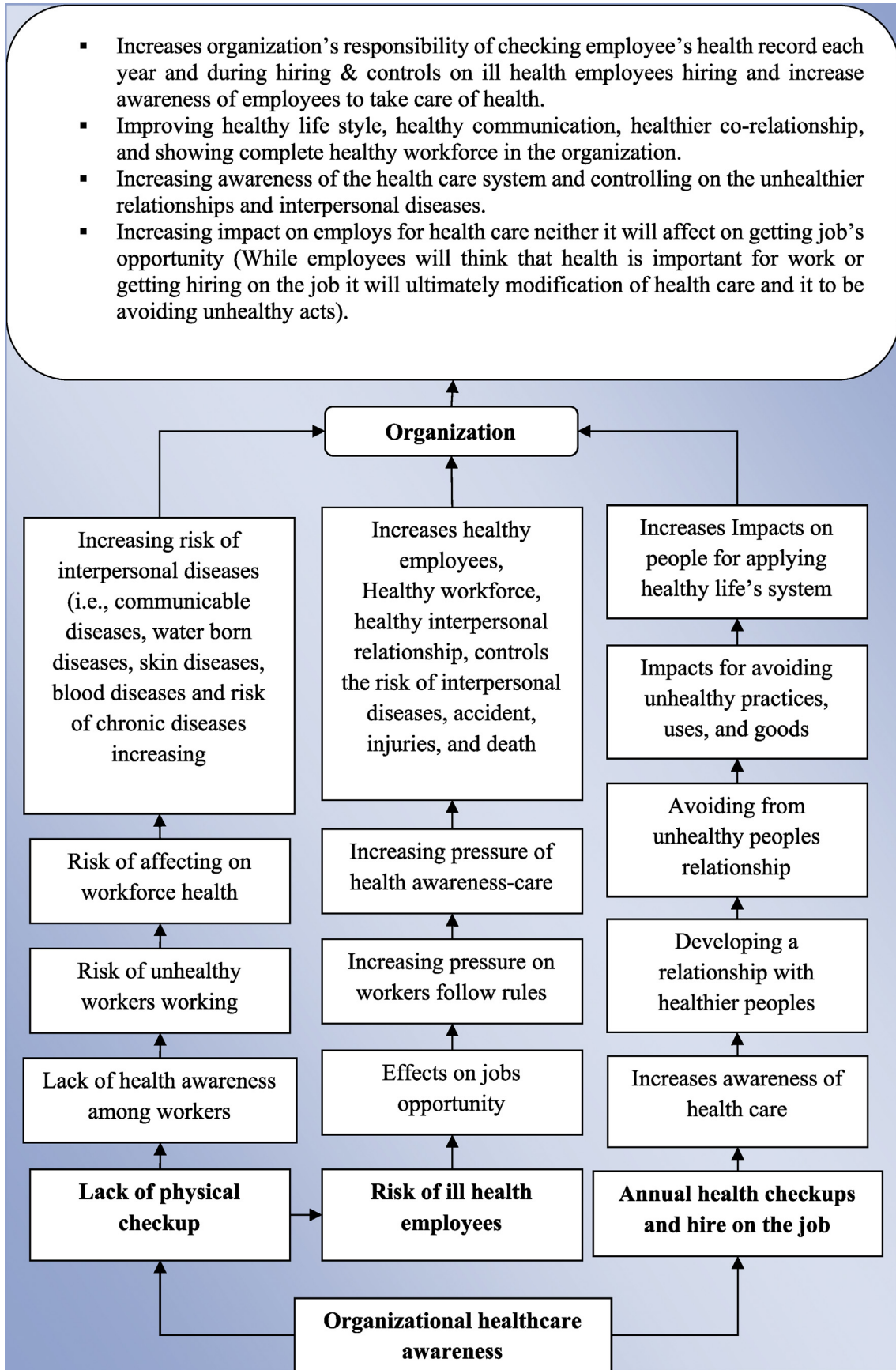
Source: [15].

checkups during hiring on the job plays a role in increasing health-care awareness perception of employees and organization and maintains annual health records to generally meet with health status annually to increase health-care awareness perception to minimize diseases that act in a state. A total of 160 million employees suffer from work-related diseases, with two or more absentees for four workdays, and work-related circulatory and communicable diseases result in cancer [16]. Another study reported that in the UK, 850,000 people are affected by exposure to hazardous substances, and this leads to a loss of £1–2 billion to the health-care system per year [17]. Similarly, in the developed countries, occupational hazards caused injury in 1 in every 10 people, and in the less developed countries, the consequences of insecurity are not adequately clear [18]. One study reported that among the African, eastern Mediterranean, and South Asian countries, the burden of occupational hazards and injuries is higher in South Asian countries than in other countries [19]. The protective measure helps in controlling hazards, and adequate understanding of the causes of occupational hazards and factors affecting their happening is a major issue in preventing them [20]. According to Sengupta et al [21], “Employers and insurers spent approximately \$85 million in workers’ compensation costs in 2007, although that figure is only a section of the costs associated with work-related illness and injury borne by employers, workers, and society overall.” The points to be noted are “illness and injuries are increased by

employers, workers, and society” and “circulatory and communicate diseases behind work-related converting in cancer,” which indicate that diseases are increasing by interpersonal relationship and poor health-care awareness perception individually. In this viewpoint, it can be perceived that employees’ unhealthy and dangerous working environment such as chemical work, poison work, oil and gas work, steel and iron work, coalmine work, construction work, and relevant other works causes injuries, accidents, chronic diseases, and relevant interpersonal diseases (i.e., an employee with ill health can increase the risk of spreading interpersonal diseases, communicable diseases, waterborne diseases, skin diseases, and blood diseases, as well as the risk of accidents and injuries). Few conceptual studies have aimed to reduce cause-specific death in middle-aged men participating in health checkups [8–10]. The point to be noted is that health checkups reduce death ratio. Similarly, two studies have reported that workplace is considered a place that encourages healthy behaviors of employees because employees spend most of their time at the workplace [11,12]. The point to be noted from the study by McEachan [11] and Lee et al [12] is that workplace is considered a place that encourages a healthy behavior, which indicates that annual physical checkups could help in developing health-care awareness perception to prevent the unhealthy act. Moreover, when employees and the organization enforce an annual health record system, it will prevent unhealthy employees working and hiring. Furthermore,



**Fig. 3.** The conceptual figure shows that occupational employees’ poor physical checkups in the organization, which leads to an increasing risk of hiring and working unhealthy employees, poor health-care awareness, and poor health record of employees and organization in a state, whereas implementing employees’ annual physical checkups in the organization maintains health records of both employees and organization in a state.



the prevention of hiring of unhealthy employees will have an effect on the employees and the organization by taking health-care awareness perception to employees and organizations in a state, similar to a study [5] that reported that a well-occupational health and safety policy minimized accidents and injuries. A number of governments encourage self-care through the treatment of small illnesses with self-medication [13]. A study of five geographical regions, namely, Asia (65%), Africa (11.8%), Europe (11.7%), America (10.9%), and Oceania (0.6%), showed the highest global work-related mortality rates in 2015 [15]. Another study defined that workplace is considered a place that encourages healthy behaviors of employees because employees spend most of the time at their workplace [11,12]. (The conceptual figure of a state's occupational health care perception is given in Fig. 3).

### 1.8. Organizational health-care awareness perception

The checking of employees' annual physical checkup report by an organization plays an important role in preventing the risk of unhealthy employees working in the organization, which involves controlling the risk of hiring and working of unhealthy and ill-health employees and the risk of employees obtaining interpersonal diseases, injuries, and accidents and maintaining healthy workforce and a healthy interpersonal relationship in the organization. According to the study by Lamm et al [5], workplace accidents and injuries are controlled with adequate occupational health and safety policies. A survey study screened 160 million [16] employees suffering from work-related diseases, and approximately more than two absentees for four workdays and circulatory and communicable diseases converts in cancer. Globally, the death of two million people [3] in a year was due to occupational accidents, work-related injuries, and illness. A study conducted by Faye et al [22] showed approximately 56 potential errors in seven pharmaceutical management processes. Furthermore, the high social and economic costs imposed is created by occupational hazards [23]. Another study also suggested that many factors are very harmful at the workplace to employees health, and these factors are classified into five major groups, namely, physical, chemical, mechanical (ergonomic), biological, and psychological factors [24]. In the viewpoint of this study, it seemed that occupational hazards can be a growing health problem at all workplaces in the world. However, what are the phenomena of workplace accidents, injuries, and illness? How could we prevent the aforementioned degrees of accident, injuries, and illness? It can be perceived that workplace accidents, injuries, and illness may be linked to the organization's poor health-care perception, hiring of employees in an organization on a subcontract basis without employees' physical report checking, employees working with ill health, and organization not knowing that employees work with good health or ill health, which may enlarge the risk of diseases, accidents, injuries, and deaths. However, the risk of accidents, injuries, and diseases can be linked to both working of ill-health employees and checking of employees' poor physical checkups in the organization. It can be perceived that in the organization, employee physical checkups are not checked and available at all. In this process, hiring and working of unhealthy and ill-health employees can increase hazards and interpersonal diseases (i.e., communicable diseases, skin disease, blood diseases, and chronic diseases in the organization). Moreover, employees' heavy workload, dangerous work such as chemical work and poison work, and other relevant works in which

working and hiring of ill-health employees can increase the risk of accidents, injuries, and death in the organization. Han [25] states that "during the subsequent 144 years, numerous influences resulted in the promotion of the concept of an annual physical examination, often accompanied by laboratory testing, as an important mass screening technique in asymptomatic adults." Steenland [26] reports that "arsenic, asbestos, beryllium, cadmium, chromium, diesel fumes, nickel, silica, environmental tobacco smoke, and radon are the principal occupational exposures that have been strongly linked to lung cancer." The point to be noted in the report of Steenland [26] is that lung cancer is linked to the aforementioned exposures. In this viewpoint, it can be perceived that in the organization, checking of employees' annual health checkups can be helpful in the early control of the fatigue before it becomes severe. As the ILO concludes, approximately 3.2 million people die in a year due to occupational accidents, and 151 employees meet with an accident every 15 seconds [13]. Occupational accident numbers were misjudged in the developing countries in the world [16]. For these countries, occupational data were not consistent because of poor safety report and poor validity of the culture instrument [27]. In the viewpoint of the ILO that 3.2 million people die and 151 employees meet with an accident every 15 seconds, to avoid misjudging occupational accident number, it is thought that an organization checks employees' annual health report, and this can effectively be able to prevent the hiring and working of unhealthy employees in the organization, which will control the risk of working and hiring of unhealthy employees, unhealthy relationship, and interpersonal diseases such as communicable diseases, skin diseases, and blood diseases including the risk of accident injuries in the organization. This manages tutorial health-care awareness perception of the organization about employees' health status, which also can have a positive impact on the organization profile similar to a study that reported that an organization obtains benefit by promoting occupational health and safety management and result boost (job motivation, job involvement, safety climate, organizational commitment, job satisfaction, and mental health well-being) [28]. Workplace is considered a place that encourages healthy behaviors of employees because employees spend most of their time at the workplace [11,12]. (The conceptual figure of organizational health-care awareness perception is given in Fig. 4).

### 1.9. Employee's health-care awareness perception

An employee's annual physical checkup involves in developing the employee's own health-care awareness perception to control the risk of increasing chronic diseases and new beginning disease to amendment health to prevent unhealthy acts and practices (i.e., unhealthy relationships like girlfriend-boyfriend including husband-wife, control on user usage of smoking, alcohol, etc.). Chronic diseases, such as stroke, cancer, diabetes, obesity, and arthritis, are considered harmful. These diseases are costly and common for health problems. Approximately 160 million employees suffer [16], and approximately two or more employees' absenteeism for four workdays is linked to work-related diseases, and circulatory diseases and communicable disease converts in cancer. Globally, two million people die in a year [3] because of occupational accidents, work-related injuries, and illness. The point to be noted in the aforementioned reports of Thakur [3] and Hämäläinen et al [16] is that circulatory diseases and

**Fig. 4.** The conceptual figure explains that in the organization, poor checking of employees' physical checkup leads to an increased risk of working and hiring of unhealthy and ill-health employees, which enlarges the risk of accidents, injuries, interpersonal diseases, disabilities, and deaths, whereas in the organization, checking of employees' annual physical checkup during hiring on the job leads to preventing of the hiring, working, and unhealthy acts of unhealthy employees, which enlarge healthy workforce and healthier interpersonal relationship with colleagues, and maintaining annual health record of employees in the organization.

communicable diseases result in cancer and two million deaths due to accidents, injuries, and illnesses, which indicates that the growth of occupationally communicable diseases is linked to interpersonal relationships and minor injuries or accidents being severely involved in increasing ill health. In this viewpoint, it can be perceived that employees' annual health checkup checking involves in increasing employees' own annual health-care awareness perception system, which can lead to a risk of severe ill health, communicable diseases, and chronic diseases through the medical consult suggestion earlier. Every year, approximately 160 million work-related diseases [4] and 58 million absentees for four work-days are linked to work-related diseases. It seems from the aforementioned report that work-related diseases also cause employee absenteeism for four workdays. In this viewpoint, it can be perceived that employees' annual physical checkup involves in managing routine health checkup of employees' own health about the present and previous disease and health result, which can help in increasing employees' health-care perception to prevent unhealthy practices (the conceptual figure of employees' health-care awareness perception is given in Fig. 5).

1.10. Family's health-care awareness perception

Employees' annual physical checkup checking plays a role in managing the positive impact on the family's health-care awareness perception to prevent the risk of interpersonal diseases (i.e.,

skin diseases, waterborne diseases, blood diseases, and relevant others). However, employees' annual physical checkup involves in preventing a family's interpersonal disease risks and positively influencing the family life's health. It can be perceived that there is no doubt that employees act like wife–husband, boyfriend–girlfriend, and adult children, and these acts are considered worker working differently, including a close interpersonal relationship such as eating a meal and drinking water together, living together, sleeping together, and playing sex. At this point, they work, but they do not have checking of annual physical checkups and having a close relationship that involves in increasing the risk of interpersonal diseases (i.e., communicable diseases, waterborne diseases, blood diseases, and skin diseases), which also involves in negatively influencing the health. With integrated safety rules and procedures, Mearns et al [29] reported that factored in their offshore, safety studies have significant correlation with accident rates. On the above point, it can be perceived that employees meet with accidents and get injuries and who do not have checking of physical checkups or they already had chronic diseases (i.e., HIV, TB, or AIDS), which involves in increasing the risk of negatively affecting the family's health. As one study [30] states, "as chronic illnesses are usually not curable, it is necessary to understand how chronic illness affects not only the individual but also the relationships within the family" and "once diagnosed with a chronic illness, it is not unusual for an individual's family members to feel anger, denial, self-blame, fear, shock, confusion, and helplessness"

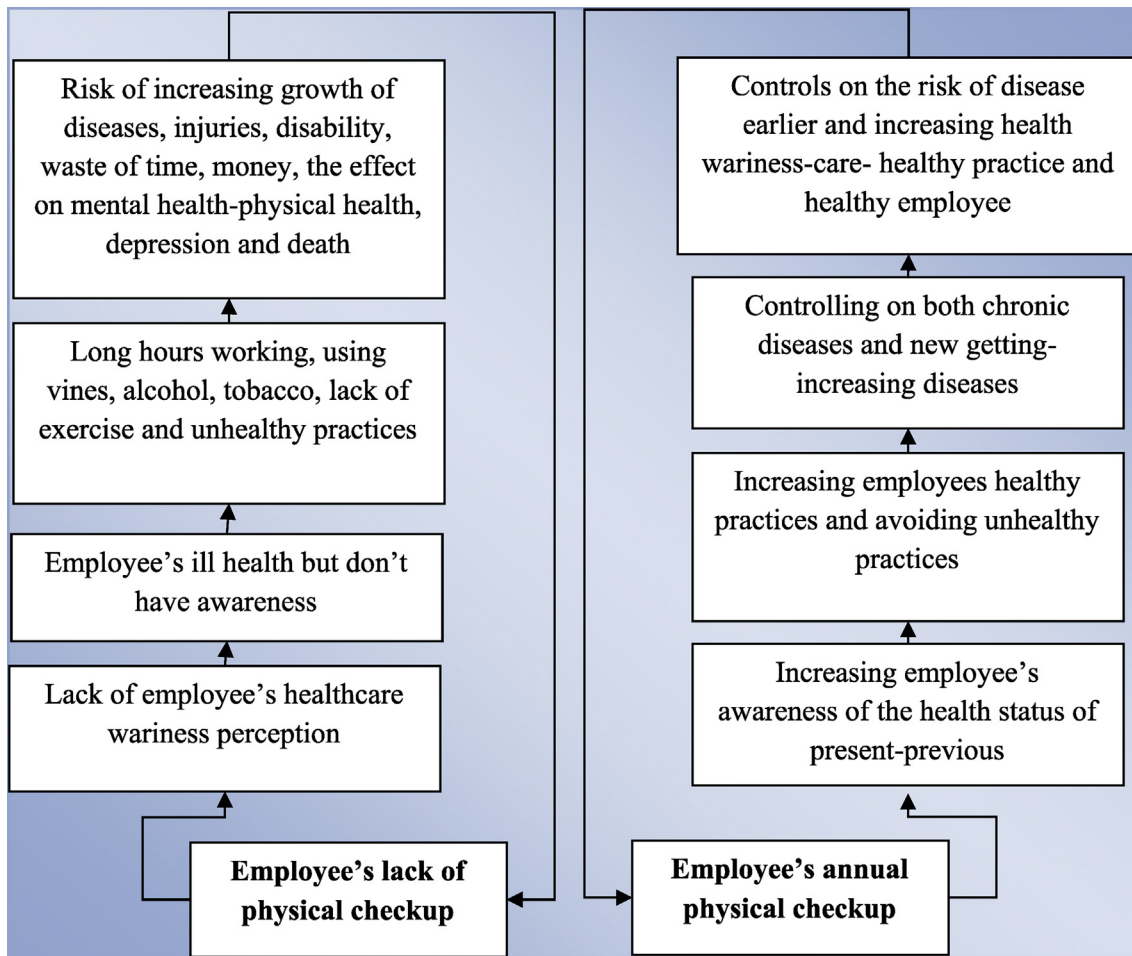
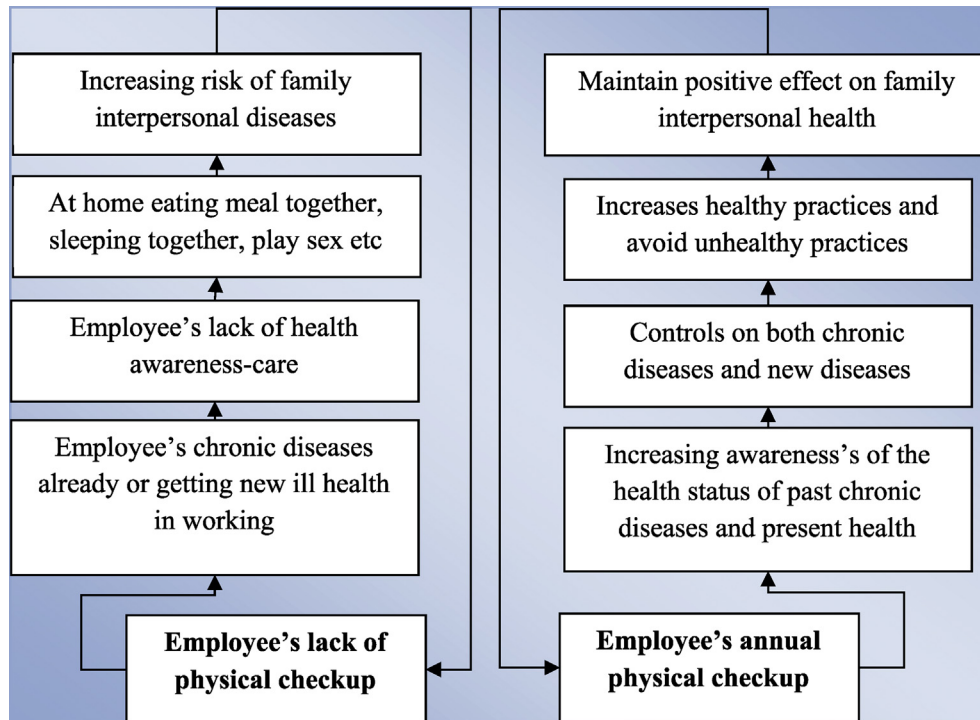


Fig. 5. The figure shows that employees lack physical checkup checking involving the lack of health-care awareness perception, which increases the risk of chronic diseases or beginning of new diseases, while employees' annual health checkup involves in increasing employees' health-care awareness perception, which helps in preventing working of ill-health employees and their unhealthy practices, thus increasing employees' own annual health-care awareness perception.



**Fig. 6.** The figure shows that employees' fatigues, injuries, and chronic diseases are because they do not have annual physical checkup checking but have a close interpersonal relationship with family, which involves in an increasing risk of family's interpersonal diseases, while the employees' annual physical checkup checking develops employees' health-care awareness perception of healthy interpersonal relationship and unhealthy interpersonal relationship, which is involved in preventing the risk of family's interpersonal disease risk such as skin diseases, waterborne diseases, and blood diseases, thus increasing healthy family life care awareness perception.

[30]. The point to be noted is that illness affects relationships within family life. In this viewpoint, it can be perceived that employees' annual health checkups could be more effective to family health care to prevent interpersonal disease risk to the family such as annual physical examination became popular in the 1920s for identifying disease before the typical time of clinical diagnosis [31]. Oboler [32] states that the public wish for extensive periodic laboratory testing. The points to be noted from the aforementioned report are that public like "extensive periodic laboratory testing" and "annual physical examination were popular for identifying disease before the typical time of clinical diagnosis," which indicate that physical checkups could be effective in preventing and identifying disease risk. Worldwide, a top priority for the policymakers and health professionals is the provision of adequate health well-being resources [33,34]. Chronic illness impacts all members of a family, and some parents may also experience periods of anxiety or depression [35]. The point to be noted is that chronic illness impacts the family. In addition, employees working with ill health and having chronic disease, HIV-AIDS, and skin diseases or affected with diseases but do not have annual health checkups and having a close relationship with family such as eating meal with family, sleeping together, drinking water in the same glasses, and playing sex involves an enlarging risk of family's interpersonal disease cycle. In this viewpoint, checking employees' annual physical checkups during hiring on the job involves in managing family's health-care awareness perception to prevent interpersonal disease risk to families, which also involves in enlarging health-care awareness perception of a healthy girlfriend, healthy boyfriend, and healthier people's friendship such as colleagues, which verily involves in developing healthy family life care awareness perception to leading families interpersonal diseases-chronic diseases.act to increase the family's perception to healthy interpersonal

relationships (the conceptual figure of employees' family's health-care awareness perception is given in Fig. 6).

## 2. Conclusion

Occupational employees' checking of annual physical checkup during hiring on the job manages health-care awareness perception of states, organizations, employees, and employees' healthy family life cycles and prevents the working; hiring; and risk of interpersonal diseases, injury, and chronic diseases of unhealthy employees at the individual level. In addition, healthy workforce, healthy employees, healthy working organization, and increasing positive impact on the health-care awareness perception of families and control of the risk of interpersonal disease in families and increasing healthy family life cycle (i.e., healthy boyfriend, healthy girlfriend, healthy husband, healthy wife, healthy children's cycle, and healthy family life style care management) improving with occupational employees' annual health checkup checking during hiring on the job. Moreover, annual physical checkup manages the responsibility of employees and organization about the annual health disease record in an organization and states. Generally, it can be said and accepted that increasing employees, organization, family life, and a state's health-care awareness perception is linked to occupational employees' annual physical checkup checking during employees hiring on the job. In addition, it is possible to say that many employees, the organization including state, and policymakers thought that annual health checkup seems an expensive decision. Truly, money is important but not more than health, and verily, health is more expensive than wealth; people work for earning money and for a good healthy life, not for getting affected with diseases, injuries, and death.



## Conflicts of interest

No potential conflict of interest is reported in this article.

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The corresponding author is a Ph.D. candidate in the Chinese Government Scholarship (CSC) at Zhejiang University, Hangzhou, China. He works on occupational health management and practice. The author gratefully acknowledges the CSC-ZJU, Supervisor for supporting and helping in sustaining the research work.

## References

- [1] Adams M, et al. The social and economic consequences of workplace injury and illness; 2002.
- [2] Cole MA, Neumayer E. The impact of poor health on total factor productivity. *J Dev Stud* 2006;42(6):918–38.
- [3] Thakur JS, et al. Integrated healthy workplace model: an experience from North Indian industry. *Indian J Occup Environ Med* 2012;16(3):108.
- [4] Zimmer S. Global cycle on challenges posed by occupational diseases. Results 2005–2007. ISSA; 2008. Technical Report 2008.
- [5] Lamm F, Massey C, Perry M. Is there a link between workplace health and safety and firm performance and productivity? *N Z J Employ Relat* (Online) 2007;32(1):72.
- [6] Torjesen I. Government prioritises health checks for 15 million adults despite pre-election promise to scrap them. *British Medical Journal Publishing Group*; 2013.
- [7] Kmietowicz Z. Drive to boost health checks in England is criticised. *BMJ: Br Med J* (Online) 2013;347.
- [8] Roberts NJ, et al. Mortality among males in periodic-health-examination programs. *N Engl J Med* 1969;281(1):20–4.
- [9] Wilhelmsen L, et al. A comparison between participants and non-participants in a primary preventive trial. *J Chron Dis* 1976;29(5):331–9.
- [10] Tibblin G, et al. The influence of repeated health examinations on mortality in a prospective cohort study, with a comment on the autopsy frequency: the study of men born in 1913. *Scand J Soc Med* 1982;10(1):27–32.
- [11] McEachan RR, et al. Evidence, theory and context: using intervention mapping to develop a worksite physical activity intervention. *BMC Public Health* 2008;8(1):326.
- [12] Lee JS, Kawakubo K, Kawamura H. Assessment of worksite health promotion environments. *Sangyo Eiseigaku Zasshi = J Occup Health* 2003;45(2):57–66.
- [13] Porteous T, et al. How and why are non-prescription analgesics used in Scotland? *Fam Pract* 2005;22(1):78–85.
- [14] James H, et al. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. *Med Princ Pract* 2006;15(4): 270–5.
- [15] Hämäläinen P, Takala J, Kiat T. Global estimates of occupational accidents and work-related illnesses 2017. Finland: Workplace Safety and Health Institute; 2017. p. 1–21.
- [16] Hämäläinen P, Takala J, Saarela KL. Global estimates of occupational accidents. *Saf Sci* 2006;44(2):137–56.
- [17] Vincent C, Neale G, Woloshynowych M. Adverse events in British hospitals: preliminary retrospective record review. *BMJ* 2001;322(7285):517–9.
- [18] Andermann A, et al. Core competencies for patient safety research: a cornerstone for global capacity strengthening. *BMJ Qual Saf* 2011;20(1):96–101.
- [19] El-Menyar A, Mekhodathi A, Al-Thani H. Occupational injuries: global and local perspectives. *Nepal J Epidemiol* 2016;6(2):560.
- [20] Unsar S, Sut N. General assessment of the occupational accidents that occurred in Turkey between the years 2000 and 2005. *Saf Sci* 2009;47(5): 614–9.
- [21] Sengupta I, Reno V, Burton Jr J. Workers' compensation: benefits, coverage, and costs, 2007. Washington, DC: National Academy of Social Insurance; 2009. 2010 p.
- [22] Faye H, et al. Involving intensive care unit nurses in a proactive risk assessment of the medication management process. *Joint Comm J Qual Patient Saf* 2010;36(8):376. AP1.
- [23] Forteza FJ, Carretero-Gómez JM, Sese A. Effects of organizational complexity and resources on construction site risk. *J Saf Res* 2017;62:185–98.
- [24] Quinlan M, Bohle P, Lamm F. Managing occupational health and safety. Palgrave Macmillan; 2010.
- [25] Han PK. Historical changes in the objectives of the periodic health examination. *Ann Intern Med* 1997;127(10):910–7.
- [26] Steenland K. Epidemiology of occupation and coronary heart disease: research agenda. *Am J Ind Med* 1996;30(4):495–9.
- [27] Hämäläinen P, Saarela KL, Takala J. Global trend according to estimated number of occupational accidents and fatal work-related diseases at region and country level. *J Saf Res* 2009;40(2):125–39.
- [28] Ward J, Haslam C, Haslam R. The impact of health and safety management on organisations and their staff; 2008.
- [29] Mearns K, Whitaker SM, Flin R. Safety climate, safety management practice and safety performance in offshore environments. *Saf Sci* 2003;41(8): 641–80.
- [30] Ellenwood AE, Jenkins JE. Unbalancing the effects of chronic illness: non-traditional family therapy assessment and intervention approach. *Am J Fam Ther* 2007;35(3):265–77.
- [31] Emerson H. Periodic medical examinations of apparently healthy persons. *J Am Med Assoc* 1923;80(19):1376–81.
- [32] Oboler SK, et al. Public expectations and attitudes for annual physical examinations and testing. *Ann Intern Med* 2002;136(9):652–9.
- [33] Grad FP. The preamble of the constitution of the world health organization. *Bull World Health Organ* 2002;80(12). 981–981.
- [34] Sasaki S, et al. Using genetic algorithms to optimise current and future health planning—the example of ambulance locations. *Int J Health Geogr* 2010;9(1):4.
- [35] Zahr LK, Khoury M, Saoud NB. Chronic illness in Lebanese preschoolers: impact of illness and child temperament on the family. *Am J Orthopsychiatry* 1994;64(3):396.