

# Quality of life among migrant construction workers in Bangalore city: A cross-sectional study

Shaik Zabeer<sup>1</sup>, Leeberk R. Inbaraj<sup>1</sup>, Carolin E. George<sup>1</sup>, Gift Norman<sup>1</sup>

<sup>1</sup>Department of Family Medicine and Community Health, Bangalore Baptist Hospital, Bengaluru, Karnataka, India

## ABSTRACT

**Context:** The construction industry is one of the oldest industries in India, which employs a large number of workers of poor socioeconomic status. Bangalore has seen significant rise in the number of migrants from various parts of the country to work in construction industry. These workers suffer from lack of good accommodation, basic sanitation, health facilities, stressful working conditions, and poor social life. Quality of life (QoL) among a population is an essential step to understand and improve health status, well-being, and mental health of the population. **Materials and Methods:** A cross-sectional study was done to assess QoL among migrant construction workers in Bangalore. We interviewed 400 workers using questionnaire containing sociodemographic profile and WHOQOLBREF scale. Factors associated with QoL were tested using independent “t” test and Chi-square test and  $P < 0.05$  was considered as statistically significant. **Results:** The mean age of the workers was  $26.38 \pm 4.3$  years and majority of them were men (95.2%). The smokers had higher mean score in psychological domain with a significant  $P$  value. Those who lived in huts had higher mean score ( $60.4 \pm 9.71$ ) in the social domain as compared with those who lived in pucca houses ( $59.7 \pm 12.5$ ). Those who were married, worked as nonlaborers, lived in pucca houses, earned higher income had higher mean scores in the environmental domain compared with those who were unmarried, laborers, lived in huts, and earned lower income. **Conclusion:** Migrant construction workers had poor physical, social, and psychological QoL, whereas QoL in environmental domain is better compared with studies done across the country and it was significantly associated with higher income, education, better accommodation, and type of work. We recommend strategies to improve their physical, social and psychological well-being of this vulnerable population through strict legislations.

**Keywords:** Bangalore, construction workers, migrant workers, quality of life

## Introduction

Urbanization has become a common feature of Indian society. According to the 2011 Census of India, level of urbanization increased from 27.81% in 2001 to 31.16% in 2011.<sup>[1]</sup> Poverty and indebtedness are the most important factors that lead to migration. In India, there are significant inequalities in the development of the various states, with states such as Kerala, Tamil Nadu, Gujarat, and Maharashtra having attained a higher level of development than Uttar Pradesh, Bihar, Jharkhand, and Chhattisgarh.<sup>[2]</sup> Migrant laborers, who account for roughly

one-third of India’s population, work long hours, are paid low wages, and work in unsafe environments, besides the other ills of social isolation and poor access to basic services, such as education, water, sanitation, and health.<sup>[3]</sup> Migration because of trafficking or internal displacement because of political unrest also led to the disruption of healthcare delivery.<sup>[4]</sup>

The construction industry is one of the oldest industries in India, which employs a large number of workers of poor socioeconomic status.<sup>[5,6]</sup> There is an increasing demand for the construction workers in the city of Bangalore. This is because of the booming industrialization, housing, trade commerce, software industry, information technology, and manufacturing of computer peripherals. Major software industries are based in Bangalore.<sup>[7]</sup>

**Address for correspondence:** Dr. Leeberk R. Inbaraj, Department of Community Health, Bangalore Baptist Hospital, Bengaluru - 560 024, Karnataka, India.  
E-mail: [leeberk2003@gmail.com](mailto:leeberk2003@gmail.com)

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Thousands of construction workers live in roadside tents and temporary sheds placed among the city's skyscrapers. They stay either on construction site/basement or on roadside. The sheds do not have any ventilation and lack facilities of water, electricity, toilets, sanitation, and safety.<sup>[7]</sup> The workers often suffer from various diseases. The reasons for frequent illness are dirty water and surroundings, living places infested with flies and mosquitoes.<sup>[5]</sup> The children often suffer from malnutrition, cholera, cold and cough caused by inhaling paint fumes and cement/dust particles. In all the construction sites, children are found playing in work areas and are prone to small accidents in the site.<sup>[5]</sup> Although migrants constitute a key population at higher risk of acquiring Human Immunodeficiency Virus (HIV) or an STI, there is a lack of easily accessible sexual health services available for them.<sup>[7]</sup>

Studies across the globe and from India have reported the utilization of health services by the migrants is less compared with local urban population. This could be because of various factors such as inadequate health staffing and exclusion of migrant pockets in primary care and general practice. Financial insecurity and unpaid sick leave lead to poor access to healthcare despite high concentration of healthcare services in the cities.<sup>[8-10]</sup>

The concept of quality of life (QoL) is used to perceive well-being among various susceptible populations, such as migrants, refugees, etc.<sup>[11-13]</sup> The World Health Organization (WHO) defined QoL as "individuals' perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, and their relationship to salient features of the environment".<sup>[14]</sup> This concept emphasized the essentially subjective nature of QoL.<sup>[15]</sup> Previous empirical studies found that perceived QoL was a significant predictor of subsequent physical illness and psychological disorders.<sup>[16,17]</sup> Therefore, studying QoL among a population is an essential step to understand and improve health status, well-being, and mental health among various vulnerable populations, such as rural-to-urban migrants who moved for seeking jobs and a better life. The main objective of the current study was to study the QoL and associated factors for poor QoL a sample of migrant construction workers in Bangalore.

## Materials and Methods

This study was conducted at a construction site at Nagawara, Bangalore, where healthcare is provided by the Department of Community Health and Family Medicine (CHD) at Bangalore Baptist Hospital. The department is the outreach arm of the hospital, dedicated to the service of the poor and marginalized in rural and urban areas of Bangalore. The medical team of CHD addresses the common health problems of construction workers and provides primary care through mobile clinic conducted every month. Interstate and intrastate migrant construction laborers including men and women aged more than 18 years who are working in this construction site for more than 1 year

were included in the study. The study was conducted from April 2016 till May 2017. From a similar study done in China, mean overall QoL among men was 2.96 with standard deviation (SD) of 0.88.<sup>[18]</sup> Using the formulae  $4(SD)^2/d^2$ , with relative precision of 10%, sample size was calculated as 401. This construction site has approximately 1,200 employees and their shelters were visited consecutively after working hours and all those who were fulfilling the inclusion criteria and giving informed consent were included in the study. Recruitment continued till the desired sample size was achieved. A semistructured questionnaire which consists of basic demographic profile and QoL was assessed using standard questionnaire format of WHOQOLBREF scale.<sup>[19]</sup> This instrument contains four domains, namely, physical health (Domain 1), psychological health (Domain 2), social relationships (Domain 3), and environmental health (Domain 4) with a total of 26 questions. Each of these domains is rated on a 5point Likert scale. As per the WHO guidelines, 25 raw scores for each domain were calculated by adding values of single items, and it was then transformed to a score ranging from 0-100, where 100 is the highest and 0 is the lowest value. The mean score of each domain and total score were calculated. Voluntary participation was ensured and informed consent was taken in their mother tongue. This study was approved by Institutional Review Board of Bangalore Baptist Hospital.

## Statistical analysis

The study participants were interviewed by the principal investigator at their work place and data was entered into Microsoft Excel 1997-2003. Statistical analysis was performed using the Statistics Package for Social Scientists (SPSS; Windows version 16.0.). Descriptive analysis was done for all the variables. Domain scores were calculated individually and transformed score was derived from raw score. Significance of association between QoL (dependent variable) with the different independent variables was analyzed using independent "t" test and Chi-square test and  $P < 0.05$  was considered as statistically significant.

## Results

A total of 400 migrant workers were studied among which most of them were men (95.2%), and one-third were in the age group of 26-30 years (36.5%) [Table 1]. The mean age was  $26.38 \pm 4.3$ . Majority of them were unmarried (75%) and among those married very few lived with their spouses and children (1%). More than half of them (51.5%) did not have a formal education or they have completed only primary education. The majority of them (77.8%) earned less than Rs. 10,000 per month. More than one-third (41.5%) were laborers in the building construction and rest were masons and other semiskilled workers, and most of them lived in different types of huts (potla, 88.0%). Nearly half of them (41.8%) were current smokers, more than half of them (60.2%) were current alcohol consumers, and a one-third of them (36.5%) were current tobacco users.

The WHO QoL BREF instrument responses were analyzed. The mean total score of the QoL scale was 55.9 (SD-3.7)

ranging from 42.3-67.3. The mean scores of various domains of QoL were  $55.2 \pm 8.36$  (physical),  $48.3 \pm 9.45$  (psychological),  $60.3 \pm 10$  (social), and  $57.6 \pm 6.6$  (environmental) [Table 2].

The mean psychological domain scores were found to be significantly different ( $P \leq 0.05$ ) among smokers ( $49.5 \pm 9.51$ ) and nonsmokers ( $47.4 \pm 9.34$ ) using independent samples ttest with a higher mean score among smokers [Table 3]. Those who lived in huts had higher mean score ( $60.4 + /9.71$ ) in the social domain as compared with those who lived in pucca houses ( $59.7 + /12.5$ ). Those who were married ( $59.0 + /7.2$ ), nonlaborers ( $59.1 + /7.01$ ), lived in pucca houses ( $60.5 + /8.9$ ) and had higher income ( $59.5 + /5.7$ ) had higher mean scores in the environmental domain of QoL when compared with those who were unmarried ( $57.2 + /6.4$ ), laborers ( $56.8 + /6.26$ ), lived in huts ( $57.2 + /6.2$ ), and had lower income ( $57.1 + /6.8$ ), and these difference in mean scores were statistically significant ( $P \leq 0.05$ ). We did not find any significant difference in the mean score among these demographic variables in physical domain of QoL.

**Table 1: Socio demographic characters of study population**

Variables	Characters	Frequency	Percentage
Gender	Male	381	95.2
	Female	19	4.8
Marital Status	Married	100	75.0
	Unmarried	300	25.0
Age (Yrs)	18-20	15	3.7
	21-25	185	46
	26-30	146	36.5
	31-35	38	9.5
	>35	16	4
Living with spouse	Yes	4	1.0
	No	96	24.0
	Not applicable	300	75.0
Education	No Education	18	4.5
	Primary	184	46.0
	Middle School	140	35.0
	High School	48	12.0
	PUC	8	12.0
	Degree	2	0.5
Literacy	Read	60	15.0
	Write	107	26.8
	Read & Write	9	2.2
	Illiterate	224	56.0
Shelter	Potla	352	88.0
	Sheds	39	9.8
	Others	9	2.3

**Table 2: Quality of life scores across the domain**

Domain	Number	Minimum	Maximum (100)	Mean	SD
Physical	400	32.14	85.71	55.2	8.36
Psychological	400	20.83	66.66	49.8	9.8
Social	400	16.66	91.66	60.3	10.0
Environmental	400	34.37	81.25	57.6	6.6
Overall	400	42.3	67.3	55.9	3.7

The QoL scores were further converted into categorical variable by obtaining the mean score and dividing the group into those who got a score above the mean and those below the mean. They were labeled as good and poor QoL as shown in Table 4. More than half of them (54%) had poor QoL. Almost two-third (60%) of the workers had poor QoL in social relationship domain and half (50%) in physical domain.

Migrant workers who had lower education (56.4%), staying in huts (55.4%) had poor overall QoL when compared with those with higher education (39.7%) and staying in other type of shelters (43.8%) with significant *P* value [Table 5].

## Discussion

In the developing countries, internal migration is a survival strategy for many laborers in search of better livelihood and opportunities. In our study group, majority of workers were between the age group of 26-30 years with mean of 26.3 (SD - 4.3 years). It has been observed in many studies across the country in Gujarat, Maharashtra in which the mean age of the construction workers ranged from 23-26.25 years.<sup>[20,21]</sup> A study done among migrant construction workers in Kolar, Karnataka had a similar observation with the mean age of 25.6 years.<sup>[22]</sup>

Our study population had majority of men and most of them were unmarried. A report from National Sample Survey in 2007-08 showed that labor migration is predominantly biased towards males in services and industrial sector.<sup>[23]</sup> This possibly explains the higher prevalence of HIV among migrant workers apart from high-risk population such as sex workers. National AIDS Control Organization (NACO) reported that the prevalence of HIV is 3.6% among migrant workers which is 10 times more than general population. This is probably because of multiple factors such as lack of family life and permanent partner, risky behavior, social and economic security, and involvement of peer-driven risk-taking activities.<sup>[24]</sup> It has been found that satisfaction with personal relationship followed by sexual activity were the strongest contributors of overall QoL in Canada.<sup>[25]</sup> As these are social domains of QoL, separation from family members among these men is possibly leading them to have poor QoL. It was found that the strongest contributors to the variance of overall QoL were satisfaction with personal relationships, followed by health status and sexual activity.

On the other hand, female migration has its own social issues. United Nations Educational, Scientific and Cultural Organization (UNESCO) reported that women migrant laborers are paid lesser than their counter parts and did not have facilities for breastfeeding, access to proper sanitation. They also do not have benefits such as maternity leave and maternity entitlements. They suffer in silence because of the stigma around women's personal hygiene issues.<sup>[26]</sup>

We found that most of the workers had attended school (95.5%) but approximately half of the study population had lower level

**Table 3: Factors associated with environmental domain of QoL**

Factors	Category	Number	Mean	SD	T statistics	P statistics
Gender	Male	381	57.6	6.53	0.186	0.852
	Female	19	57.4	9.15		
Marital status	Married	100	59.0	7.20	2.353	0.019
	Unmarried	300	57.2	6.43		
Smoking	Yes	167	57.2	6.83	-0.969	0.333
	No	233	57.9	6.55		
Alcohol	Yes	241	57.9	6.81	0.993	0.321
	No	159	57.2	6.43		
Tobacco	Yes	146	58.1	7.41	1.032	0.303
	No	254	57.4	6.19		
Monthly income	<10000	308	57.1	6.83	-3.147	0.002
	>10000	92	59.5	5.70		
Education	Illiterate and primary	342	57.4	6.61	-2.035	0.043
	Secondary and higher	58	59.3	6.78		
literacy	Read and write	176	57.1	6.98	-1.395	0.164
	Illiterate	224	58.0	6.39		
Type of work	Laborer	253	56.8	6.26	-3.435	0.001
	others	147	59.1	7.09		
Type of Shelter	Hut	352	57.2	6.20	-3.212	0.000
	others	48	60.5	8.97		

**Table 4: Distribution of QoL**

Domain	Poor QoL		Good QoL	
	n	%	n	%
Physical	200	50	200	50
Psychological	174	43.5	226	56.5
Social	242	60.5	158	39.5
Environmental	136	34	264	66
Overall	216	54	184	46

of education (50.5%) and illiterate (56%) and only 2.2% were able to read and write. The illiteracy rate is much higher as compared with other studies done in Maharashtra.<sup>[20,27]</sup> Low level of education which leads to unemployment is obviously one of the major reasons for migration. A similar observation was noted among agricultural migrants in Punjab. This study showed that because of illiteracy and lack of employment in the native place, people migrate to attain a better economic status in life. It was observed that low wages at the native place was the major economic factor that contributed to the migration of 94.3% migrants.<sup>[28]</sup> The highest proportion of the migrants were from Uttar Pradesh, followed by Jharkhand and Bihar. This finding was different from study done in Karnataka as well as Gujarat and Maharashtra in which most of the workers were migrants from Bihar and West Bengal in India.<sup>[20-22]</sup>

The prevalence of alcohol use was (60.8%) high among the study population. This is much higher than the observations from other studies which ranged from 45-50%. Similarly, tobacco use in chewable and smoking form was also observed to be high among our population.<sup>[20-22,27]</sup> Separation from family, lack of relationships, long working hours, and easy accessibility to liquor in Bangalore could be the possible reasons for high prevalence of tobacco and alcohol use among these population.

When compared with the domain scores of previous study done in similar population in Karnataka, our population had poor score in all the domains (physical, social, psychological) except environmental domain.<sup>[22]</sup> This is probably because of the initiatives of the construction firm which ensures them better health facility through the nearest tertiary care centre and offers other facilities at the work place. This may not reflect the scenario of other migrant workers in the city. Social domain includes satisfaction in relationships, sexual life, support from family and friends. It is clear that we observed poor score in this domain probably because of their loneliness and separation from family and friends. The workers have scored less in the physical domain which includes pain and discomfort, work capacity, sleep, and rest. Various studies have found that musculoskeletal problems constitute major proportion of their health issues.<sup>[29,30]</sup>

It was also observed that marital status, monthly income, type of work and shelter were significantly associated with environment domain of QoL. The possible reasons could be the perception that safety, better physical environment, opportunity for leisure activities, better living condition, access to health services and transport are easily available for those who are nonlaborers with reasonable good income. It is obvious that they also have better accommodation and their QoL is better than those who work as laborers.

We also found that smoking had an influence on psychological domain of QoL. It is an established fact that low QoL and depression are associated with higher odds of smoking initiation. There is a negative relationship between smoking and QoL and the magnitude of this association is related to the number of cigarettes smoked.<sup>[23]</sup> Even though we did not assess depression or psychological distress in our study, it is likely that this population

Table 5: Factors associated with overall QoL

Factors	Category	QoL				P	OR (95% CI)
		Poor (216)		Good (184)			
		n	%	n	%		
Gender	Male	209	54.9	172	45.1	0.1	2.0 (0.8-5.4)
	Female	7	36.8	12	63.2		
Age (Yrs)	<25	99	49.5	101	50.5	0.07	0.69 (0.46-1.0)
	>25	117	58.5	83	41.5		
Marital status	Married	51	51	49	49	0.4	0.8 (0.5-1.3)
	Unmarried	165	55	135	45		
Education literacy	Illiterate/Lower	193	56.4	149	43.6	0.01	1.9 (1.11-3.4)
	Higher	23	39.7	35	60.3		
Monthly income	Read and write	97	55.1	79	44.9	0.6	1.0 (0.7-1.6)
	Cannot read and write	119	53.1	105	46.9		
Type of work	<10000	174	55.94	137	44.1	0.1	1.4 (0.8-2.2)
	>10000	42	47.2	47	52.8		
Shelter	Laborers	148	58.5	105	41.5	0.01	1.6 (1.0-24.)
	Others	68	46.3	79	53.7		
Shelter	Hut	195	55.4	157	44.6	0.1	1.5 (0.8-2.9)
	Others	21	43.8	27	56.2		

would have higher prevalence of depression because of their separation from family, lack of relationships, and hardships they undergo at their work. There has been an evidence for significant negative correlation between QoL and psychological distress.<sup>[31]</sup> A study done among construction workers in Gujarat by Gaurav *et al.* found that 40.75% of the participants had high level of stress.<sup>[32]</sup> It has also been studied that poor psychological well-being can bring down the productivity of the work.<sup>[33,34]</sup>

One of the important values of family practice lies on reaching out to the vulnerable in the community. This population being migrant, they neither have the accessibility to state healthcare system nor access to health services by the employers. A recent study specifically examined the extent of the services provided by frontline health workers as experienced migrants in 13 Indian cities. It reported that a very small proportion of people had seen the visits of the health workers and experienced their services and only one-fifth of the migrant mothers and children received maternal and child health services from health workers.<sup>[35]</sup> Hence, all primary care providers should be sensitized towards not only the health issues of the migrants but also other determinants of health such as QoL. This should be addressed during every encounter by the family physicians.

Ours is a community-based cross-sectional study. There have been many studies from Bangalore which reported on various health issues but to the best of our knowledge, this is the first study that has looked into QoL. We had a good rapport with the workers as we offer routine health services to this population and it was easier to share their perspectives during the interview.

We did not assess the mental health of the workers and did not explore their stress at work and productivity. These factors may have significant impact on QoL. We could have added some more independent factors in the study tool which may affect the QoL.

## Conclusion

Migrant construction workers in Bangalore consist of mainly young adults and unmarried men. Prevalence of harmful tobacco and alcohol use higher than existing evidences are available in this population. They have poor physical, social, and psychological QoL, whereas QoL in environmental domain is better when compared with studies done in other parts of India, and it was significantly associated with higher income, education, those who lived in better accommodation and nonlabor category workers. Smoking was associated with psychological domain of QoL. We recommend strategies to improve their physical, social, and psychological well-being of this vulnerable population through strict legislations.

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## Conflicts of interest

There are no conflicts of interest.

## References

1. Chandramouli C. Rural Urban Distribution of Population [ONLINE]. Census of India 2011 [cited on January 2019]. Available from: <http://www.censusindia.gov.in>.
2. Kundu A, Sarangi N. Migration, employment status and poverty: An analysis across urban centres. *Econ Pol Week* 2007;42:299-306.
3. Skeldon R. Trafficking: A perspective from Asia. *IntMigr* 2000;38:7-30.
4. Das B. Assessment of occupational health problems and physiological stress among the brick field workers of West Bengal, India. *Int J Occup Med Environ Health* 2014;27:413-25.
5. Premchander S, Prameela V, Banu S, Meenakshi KG,

- Manjunath H, Prema T. The Socio-economic status of migrant construction workers in Bangalore and intervention plan to improve their livelihoods. *Urban India* 2014;34:112-33.
6. Dhar RL. Understanding working class lives: An examination of the quality of life of low income construction workers. *Work* 2014;49:87-105.
  7. Indian Council of Social Science Research (ICSSR). National Workshop on Internal Migration and Human Development in India [Online]. 2011 Dec 6-7 [cited on 2017 Jun 20]. Available from: [http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/New\\_Delhi/pdf/Internal\\_Migration\\_Workshop\\_-\\_Vol\\_2\\_07.pdf](http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/New_Delhi/pdf/Internal_Migration_Workshop_-_Vol_2_07.pdf).
  8. Gawde NC, Sivakami M, Babu BV. Utilization of maternal health services among internal migrants in Mumbai, India. *J Biosoc Sci* 2016;48:767-96.
  9. Kusuma YS, Kumari R, Kaushal S. Migration and access to maternal healthcare: Determinants of adequate antenatal care and institutional delivery among socio-economically disadvantaged migrants in Delhi, India. *Trop Med Int Health* 2013;18:1202-10.
  10. Heaman M, Bayrampour H, Kingston D, Blondel B, Gissler M, Roth C, Alexander S, *et al.* Migrant women's utilization of prenatal care: A systematic review. *Matern Child Health J* 2013;17:816-36.
  11. Bayram N, Thorburn D, Demirhan H, Bilgel N. Quality of life among Turkish immigrants in Sweden. *Qual Life Res* 2007;16:1319-33.
  12. Browne S, Roe M, Lane A, Gervin M, Morris M, Kinsella A, *et al.* Quality of life in schizophrenia: Relationship to sociodemographic factors, symptomatology and tardive dyskinesia. *Acta Psychiatr Scand* 1996;94:118-24.
  13. Ghazinour M, Richter J, Eisemann M. Quality of life among Iranian refugees resettled in Sweden. *J Immigr Health* 2004;6:71-81.
  14. Group W. Development of the WHOQOL: Rationale and current status. *Int J Mental Health* 1994;23:24-56.
  15. Saxena S, Orley J. Quality of life assessment: The world health organization perspective. *European Psychiatry* 1997;12:263s-6s.
  16. Schnurr PP, Hayes AF, Lunney CA, McFall M, Uddo M. Longitudinal analysis of the relationship between symptoms and quality of life in veterans treated for posttraumatic stress disorder. *J Consult Clin Psychol* 2006;74:707-13.
  17. Scogin F, Morthland M, Kaufman A, Burgio L, Chaplin W, Kong G. Improving quality of life in diverse rural older adults: A randomized trial of a psychological treatment. *Psychol Aging* 2007;22:657-65.
  18. Wang P, Chen C, Yang R, Wu Y. Psychometric evaluation of health related quality of life among rural-to-urban migrants in China. *Health Qual Life Outcomes* 2015;13:155.
  19. WHO-BREF Introduction, Administration, Scoring and generic version of the assessment Questionnaire [online]. 1996 [Cited on January 2019]. Available from: [http://www.who.int/mental\\_health/media/en/76.pdf](http://www.who.int/mental_health/media/en/76.pdf).
  20. Patel HC, Moitra M, Momin MI, Kantharia SL. Working conditions of male construction worker and its impact on their life: A cross sectional study in Surat city. *Natl J Community Med* 2012;3:652-6.
  21. Adsul BB, Laad PS, Howal PV, Chaturvedi RM. Health problems among migrant construction workers: A unique public-private partnership project. *Indian J Occup Environ Med* 2011;15:29-32.
  22. Mathew G, Ramesh N, Shanbhag D, Goud R, Subramanian S, Lobo C, *et al.* Quality of life and probable psychological distress among male workers at a construction site, Kolar district, Karnataka, India. *Indian J Occup Environ Med* 2016;20:54-9.
  23. Migration in India [Online]. [Cited on July 2011]. Available from: [http://mospi.nic.in/sites/default/files/publication\\_reports/533\\_final.pdf](http://mospi.nic.in/sites/default/files/publication_reports/533_final.pdf).
  24. HIV 10 times more prevalent among migrants than general population. *Times of India* 2012 Jan 12. Available from: [Timesofindia.indiatimes.com/india/HIV-10-times-more-prevalent-among-migrants-than-general-population/articleshow/11456671.cms](http://timesofindia.indiatimes.com/india/HIV-10-times-more-prevalent-among-migrants-than-general-population/articleshow/11456671.cms).
  25. Robinson JG, Molzahn AE. Sexuality and quality of life. *J Gerontol Nurs* 2007;33:19-27; quiz 38-9.
  26. Women migrant workers in India vulnerable to harassment: UN. *Firstpost* 2013 Oct 17. Available from: <https://www.firstpost.com/living/women-migrant-workers-in-india-vulnerable-to-harassment-un-1177331.html>.
  27. Laad PS, Adsul BB, Chaturvedi RM, Shaikh M. Prevalence of substance abuse among construction workers. *Paripex Indian J Res* 2013;2:280-3.
  28. Kaur B, Singh JM, Garg BR, Singh J, Singh S. Causes and impact of labour migration: A case study of Punjab agriculture. *Agr Econ Res Rev* 2011;24:459-66.
  29. Mohopatra R. *Occupational Health Hazards in Small Scale and Other Industries*. 1<sup>st</sup> ed. New Delhi: Jaypee Brothers Medical Publishers Pvt Ltd; 2002. p. 54-5.
  30. Valsangkar S, Surendranath Sai K. Impact of musculoskeletal disorders and social determinants on health in construction workers. *Int J Biol Med Res* 2012;3:1727-30.
  31. Goldenberg M, Danovitch I, IsHak WW. Quality of life and smoking. *Am J Addict* 2014;23:540-62.
  32. Gaurav GD, Krushna GM, Trivedi AA. Stress among unorganized sector workers in Vadodara city. *Int J Res Dev Health* 2013;1:183-90.
  33. Dewa CS, Lin E, Koehoorn M, Goldner E. Association of chronic work stress, psychiatric disorders, and chronic physical conditions with disability among workers. *Psychiatric Serv* 2007;58:652-8.
  34. Joling CI, Proper KI, Blatter BM, Bongers PM. A work site prevention program for construction workers: Design of a randomized controlled trial. *BMC Public Health* 2010;10:336.
  35. Babu BV, Sharma Y, Kusuma YS, Sivakami M, Lal DK, Marimuthu P, *et al.* Internal migrants' experiences with and perceptions of frontline health workers: A nationwide study in 13 Indian cities. *Int J Health Plann Manage* 2018. doi: 10.1002/hpm. 2538.