Morbidity profile and quality of life of waged agricultural workers in a district of Andhra Pradesh

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ABSTRACT

Background: Agricultural workers derive their income by working on farms and confront a multitude of health risks, but their health profile or quality of life is rarely studied. **Objectives**: To assess the morbidity profile of agricultural workers, their quality of life and the association of morbidity profile with quality of life. **Methodology**: A Community based cross-sectional study conducted among 90 agricultural workers selected by multistage sampling in the villages of East Godavari district. Data was collected over 3 months using a semi-structured questionnaire and the WHO Quality Of Life-BREF questionnaire. Descriptive data were expressed as Mean and standard deviation and Chi-square test was used to analyse the association. **Results**: Males were 57.8% and females 42.2%. Mean age was 36.3±9.89 years. Majority, 42.3% belong to 31 – 40 years group. Morbidities were sunstroke 27 (30%), skin allergies 32 (35.6%) and psychological disturbances 55 (61.1%). Good Quality of life was seen in 52 (57.8%) people in both physical and social domains and poor quality of life seen in 51(56.7%) psychological and 49 (54.4%) environmental domains. Statistical associations are seen between morbidities and quality of life. **Conclusion**: Agricultural workers have considerable morbidities and compromised quality of life in all four domains, which needs to be addressed.

INTRODUCTION

India is a country with a huge population, half of them being employed in agriculture.(1) Waged agricultural workers are the workers working in crop fields, orchards, glasshouses, livestock units and preliminary facilities of processing. Since these workers neither own nor lease the land they cultivate, nor the tools and equipment they use, they are regarded as wage labourers. This makes them a category separate and distinct from farmers.(2) More than half of India's workforce is engaged in agriculture and Andhra Pradesh ranks prominently among India's leading agricultural states.(3) Nearly 67% of people in India reside in rural regions and depend primarily on agriculture for their livelihood.(4,5)

Research indicates that agricultural workers confront a multitude of health risks and occupational hazards. Quality of life indicators among agricultural workers often reveal disparities compared to urban populations. Naik D et al,(6) found that agricultural workers reported significantly lower scores on quality of life. There is dearth of research on the status of health and quality of life of agricultural workers, especially in this part of the country. Hence this study explored the morbidity profile and quality of life of agricultural workers in a district of Andhra Pradesh.

Aim and Objectives:

To assess the health status and quality of life of agricultural workers in a district of Andhra Pradesh.

- To assess the sociodemographic profile of agricultural workers

- To assess the morbidity profile of the agricultural workers
- To determine the quality of life of agricultural workers
- To analyze the association of morbidity profile and quality of life.

MATERIAL & METHODS

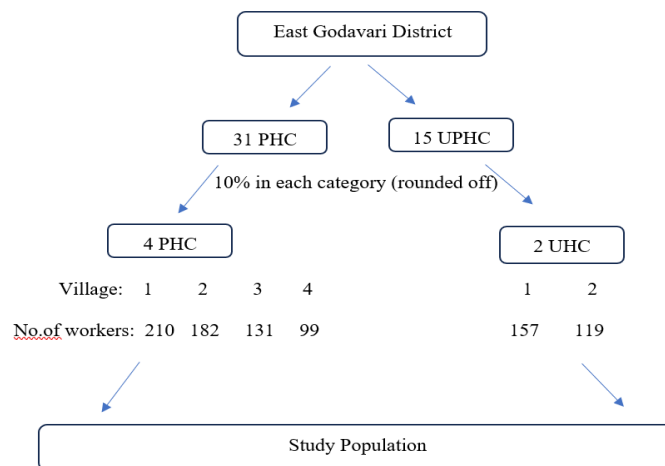**Study Design:** Community based analytical cross-sectional study

Study Setting: The study was conducted in the agricultural fields and households of agricultural workers from selected PHC areas in East Godavari district of Andhra Pradesh.

Study Population: Waged agricultural workers residing in East Godavari district

Study period: The study was carried over 6 months i.e., from 15th May 2024 to 14th November 2024.

Sampling technique: Multistage sampling method. All agricultural workers satisfying the inclusion and exclusion criteria from a selected village of each selected PHC/UPHC were line-listed and 10% of them were selected by Probability proportional to size sampling to attain the required sample size.

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                   East Godavari District

          31 PHC                    15 UPHC

      10% in each category (rounded off)

          4 PHC                      2 UHC

Village:    1    2    3    4           1      2

No.of workers: 210  182  131   99       157    119

                   Study Population
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Sample size calculation: Considering the prevalence of medium Quality of Life in agricultural workers in India P=80% (Based on a study by Naik D, Itagi S, Rathod JM).(6)

At Confidence interval (CI) = 90%
Relative precision (L) = 10% of P = 8.0
Sample size (n) = $(Z\alpha/2)^2 \times p \times (1-p) / L^2$
$n = [1.64]^2 \times 80 \times 20 / [8]^2 = 67.24$

Considering a non-response rate of 20%, the minimum estimated sample size for the present study will be n = 67.24 + 13.44 = 80.68 and the final sample size is rounded off to 90.

Inclusion criteria: Agricultural workers who practised agriculture for at least 9 months in the past 1 year and gave consent to participate in the study were included in the study**.**

Exclusion criteria: Those who were seriously ill and not available for data collection on 2 consecutive attempts were excluded from the study.

Study tools and Data collection: Data was collected using a predesigned, pretested semi-structured questionnaire containing details of demographics and morbidity profile. WHO QOL-BREF questionnaire was used to collect details of Quality of life, which assesses the quality of life across various domains like physical, social, psychological and environmental domains.(7) The tool consists of 26 items, of which two assess overall quality of life and general health, while the remaining 24 items are grouped into four domains after rating on a five-point Likert scale. Mean item score is multiplied by four to generate a domain score ranging from 4 to 20. These domain scores can then be converted to a 0–100 scale.The scale demonstrated strong internal consistency, with an overall Cronbach's alpha of 0.896. All domains showed reliability above 0.70, except the Social Relationships domain, which recorded 0.533. Test–retest reliability was significant at the p < 0.01 level across all domains, indicating good stability of the questionnaire.(8)

Statistical analysis: Data collected was entered in a Microsoft Excel 2019 spreadsheet and double-checked for errors. Data analysis was done using Microsoft Excel and Statistical Package for Social Sciences(SPSS) version 24. Results were expressed in terms of mean±SD for continuous variables and percentages for categorical variables. Data was graphically represented and tabulated. The association between different categorical variables was examined using the Chi-square test. A p-value less than 0.05 was taken as statistically significant for all analyses.

Ethical clearance: Ethical clearance was obtained from the Institutional Ethics Committee vide Ref: GSLMC/RC:1253A-EC/1253A-05/2024. All participants provided informed consent after

receiving a clear explanation of the study. They were assured of anonymity, and the confidentiality of their information will be strictly maintained at all times.

Definitions: WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.(7) Quality of life (QOL) refers to the overall well-being of individuals and society, including both negative and positive aspects of life, measuring life satisfaction across various aspects such as physical health, family, education, employment, wealth, religious beliefs, finance and environment.(6)

RESULTS

Sociodemographic profile of study participants: Among a total of 90 study participants, males were 52 (57.8%) and females 38 (42.2%). The majority of participants, 38 (42.3%) were aged between 31–40 years and the mean age was 36.3±9.89 years. Based on the ration card issued by the Government of Andhra Pradesh under the Public Distribution System, the study participants were divided into two categories APL and BPL (Table 1).

Morbidity profile of study participants: The majority of the study participants 55 (61.1%) suffered from psychological disorders followed by Bone and joint diseases in 34 (37.8%) and only 9 (10%) study participants had a history of recent hospitalization. (Figure 1).

Quality of life of study participants: Based on QoL scores in various domains, participants were classified into two groups, as POOR QOL for participants with QoL scores below 50% on the transformed domain score, and GOOD Quality of Life for participants with QoL scores equal to or greater than 50% on the transformed domain score. It was found that QOL was good in the Physical and Social domains in 52 (57.8%) and poor in 51 (56.7%) in the psychological domain and (42.2%) in the physical and social relationships domain. Mean scores were higher in the Social and Physical domains with 59.62±20.40 and 57.46±17.11 respectively (Table 2).

Good QoL in the environmental domain was significantly associated with a low prevalence of skin diseases, as well as sunstroke, psychological disorders, accidents, bites, and bone and joint diseases. Good QoL in the physical domain was significantly associated with a lower prevalence of bites, accidents and bone and joint diseases. Good QoL in psychological diseases was significantly associated with a lower prevalence of bites, respiratory diseases, bone and joint diseases. Similarly, in the social domain, good QoL was significantly associated with a lower prevalence of psychological disorders, bites, bones and joint diseases (Table 3).

Assessment of participant's self-perceived overall Quality of Life showed that the majority of participants 42 (46.7%) perceived their overall Quality of Life as good and 8 (8.9%) perceived their Quality of Life as very good, both indicating a positive self-perception (Figure 2).

Assessment of participant's self-perceived overall satisfaction with their health showed that, 38 (42.3%) felt satisfied and 13 (14.4%) felt very satisfied with their health, while 20 (22.2%) had a neutral opinion, 19 (21.1%) study participants were either dissatisfied or very dissatisfied with their health (Figure 3).

Table 1: Socio-demographic profile of waged agricultural workers

Parameter	No. (%)
Age (in years)	
21 – 30	27 (30.0)
31 – 40	38 (42.3)
41 – 50	22 (24.4)
> 50	03 (03.3)
Gender	
Male	52 (57.8)
Female	38 (42.2)
Marital status	
Married	70 (77.8)
Single (unmarried and divorced)	20 (22.2)
Religion	
Hindu	80 (88.9)
Christian	10 (11.1)
Muslim	00 (00.0)
Literacy status	
Illiterate	17 (18.9)
Primary school	22 (24.4)

Parameter	No. (%)
High school	31 (34.4)
Degree and above	20 (22.3)
Socioeconomic status	
Above Poverty Line (APL)	27 (30.0)
Below Poverty Line (BPL)	63 (70.0)

Table 2: Transformed Quality of Life scores in QOL domains

Domain	Mean score Mean±S.D	Good QoL No. (%)	Poor QoL No. (%)
Physical	57.46±17.11	52 (57.8)	38 (42.2)
Psychological	48.88±17.41	39 (43.3)	51 (56.7)
Social relationships	59.62±20.40	52 (57.8)	38 (42.2)
Environmental	48.33±15.89	41 (45.6)	49 (54.4)

Table 3: Quality of Life domains and association with morbidities

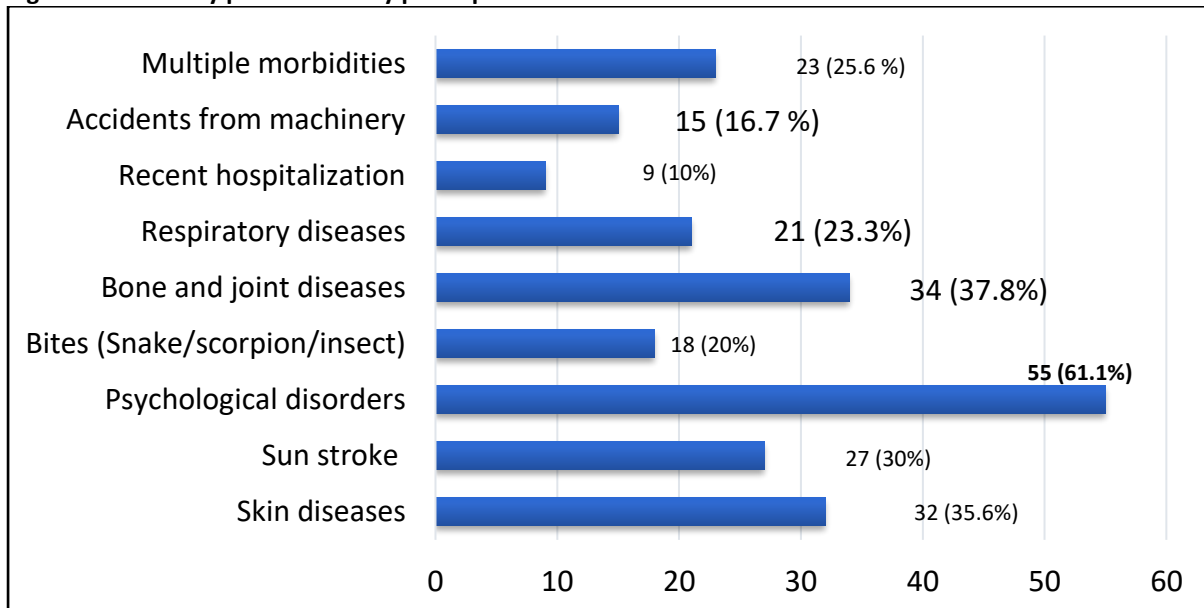| Domain	Physical Domain		Psychological Domain		Social Domain		Environmental Domain	
Quality of Life	Good	Poor	Good	Poor	Good	Poor	Good	Poor
Morbidities	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Skin diseases	19(36.5)	13 (34.2)	17 (43.6)	15 (29.4)	21(40.4)	11(28.9)	15(36.6)	17 (34.7)
	χ^2=0.052, p=0.820		χ^2=1.939, p=0.164		χ^2=1.253, p=0.263		χ^2=0.035, p=0.852	
Sun stroke	18(34.6)	9(23.7)	13(33.3)	14(27.5)	17(32.7)	10(26.3)	12(29.3)	15(30.6)
	χ^2=1.249, p=0.264		χ^2=0.364, p=0.546		χ^2=0.425, p=0.514		χ^2=0.019, p=0.890	
Psychological Disorders	29(55.8)	26(68.4)	21(53.8)	34(66.7)	27(51.9)	28(73.7)	20(48.8)	35(71.4)
	χ^2=1.479, p=0.224		χ^2=1.528, p=0.216		χ^2=4.375, p= 0.036		χ^2=4.818, p=0.028	
Bites	3(5.8)	15(39.5)	3(7.7)	15(29.4)	5(9.6)	13(34.2)	4(9.8)	14(28.6)
	χ^2=15.588, p=0.000		χ^2=6.516, p=0.011		χ^2=8.301, p=0.004		χ^2=4.939, p=0.026	
Bones and joint diseases	8(15.4)	26(68.4)	6(15.4)	28(54.9)	6(11.5)	28(73.7)	7(17.1)	27(55.1)
	χ^2=26.273, p=0.000		χ^2=14.682, p=0.000		χ^2=36.073, p=0.000		χ^2=13.734, p=0.000	
Respiratory diseases	14(26.9)	7(18.4)	9(23.1)	12(23.5)	15(28.8)	6(15.8)	7(17.1)	14(28.6)
	χ^2=0.887, p=0.346		χ^2=0.003, p= 0.960		χ^2=2.092, p=0.148		χ^2=1.650, p=0.199	
Accidents (agricultural machinery)	4(7.7)	11(28.9)	4(10.3)	11(21.6)	6(11.5)	9(23.7)	3(7.3)	12(24.5)
	χ^2=7.142, p=0.008		χ^2=2.036, p=0.154		χ^2=2.332, p=0.127		χ^2=4.740, p=0.045	

Figure 1: Morbidity profile of study participants

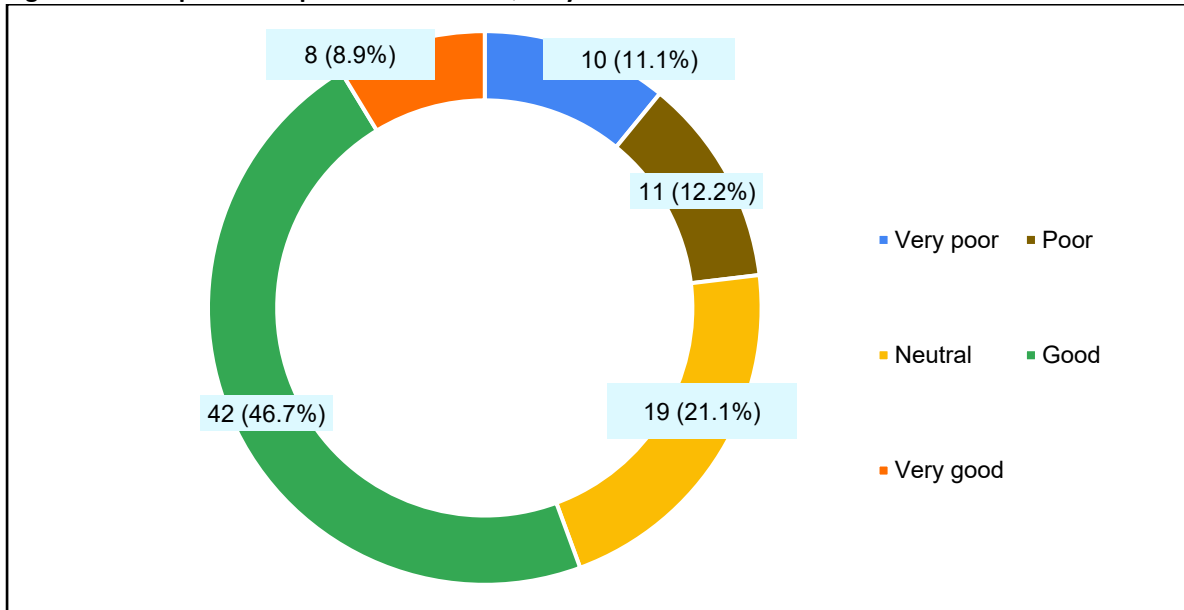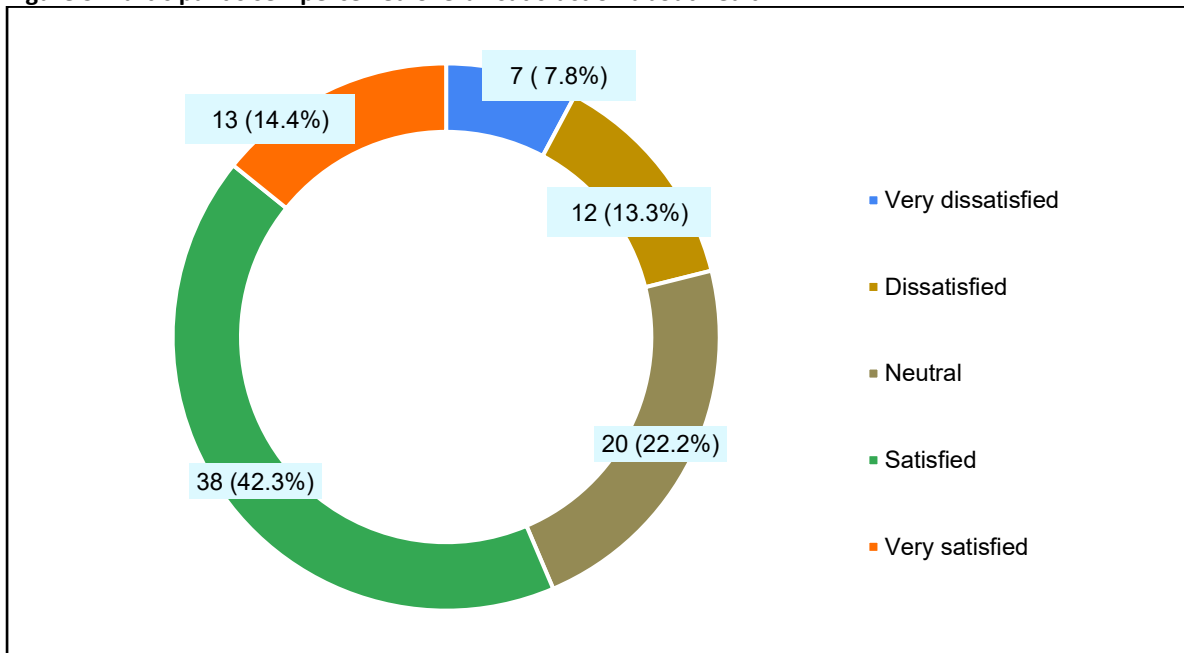**Figure 2: Participants' Self perceived overall Quality of life**

8 (8.9%) · 10 (11.1%) · 11 (12.2%) · 42 (46.7%) · 19 (21.1%)

Legend: ■ Very poor ■ Poor ■ Neutral ■ Good ■ Very good

Figure 3: Participant's self-perceived overall satisfaction about health

7 (7.8%) · 13 (14.4%) · 12 (13.3%) · 20 (22.2%) · 38 (42.3%)

Legend: ■ Very dissatisfied ■ Dissatisfied ■ Neutral ■ Satisfied ■ Very satisfied

DISCUSSION

Agriculture exposes workers to numerous physical and mental health risks because of the strenuous labour performed in challenging conditions.(9) Farmers and their families are vulnerable to physical health risks because of strenuous agricultural tasks, prolonged work hours, and constant exposure to fluctuating light and weather conditions.(10) Along with general ailments, long-term exposure to agrochemicals and machinery results in distinct health risks commonly seen among farmers.(11) The psychological toll of farming is now more widely recognized, with farmers experiencing significant stress, depression, anxiety and a notable rise in suicide rates.(12)

The present study found that the agricultural workers were predominantly from younger and middle-aged groups (66.7% in 31-50 years age group) with very few older adults. While in the present study, 17 (18.9%) participants are illiterates with no formal education, 22 (24.4%) participants have completed primary school and 31 (34.4%) participants high school education, Gejji S, Sunanda GT,(13) reported about their agricultural workers that, the highest 54% studied up to 10th, 28% were illiterates,10% higher secondary education and 8%

studied under graduate / Post graduate. While in another study done by Naik D,(6) 57% of study participants were illiterates, 17% had primary education and in a study done by Sinambela WY(14) in Indonesia, 72.5 % were illiterates. While in the present study, only 30.0% of participants fall into the above poverty line (APL) category, 70.0% of participants are categorized as BPL, Gejji S, Sunanda GT,(13) analysed that 61% were below poverty line (BPL).

Various morbidities assessed in the current study showed that the majority of the study participants, 55 (61.1%) suffered from psychological disorders followed by Bone and joint diseases in 34 (37.8%) and Skin diseases in 32 (35.6%) while only 9 (10%) study participants had history of recent hospitalization. About 23 (25.6%) had suffered multiple morbidities. In a study done by Yasmin S(15) et.al in Alipurduar district of West Bengal assessing the morbidity patterns, it was found that Musculoskeletal disorders were seen in 17.9% of study participants, which is lesser than in our present study, followed by skin disorders 17.7% and respiratory disorders 16.2%. In another study done by Somasundaram KV (16) in a district of Maharashtra, respiratory disorders were seen in 15% of the study group followed by musculoskeletal and skin disorders with 12.6% and 9% respectively. In the studies done by Yasmin S(15) and Somasundaram KV,(16) accidents and injuries were observed only in 5.8% and 8% of study participants in contrast to 16.7% in our study.

Among Bone and joint diseases, Low Back Pain (LBP) was the most common musculoskeletal disorder (12.1%). Similarly, LBP was the most common musculoskeletal disorder in the study conducted by Deepthi et al,(17) Garima gupta et al,(18)Hong xiao et al,(19) Jyoti V Vastrad et al.(20)Skin diseases commonly occur due to exposure to the sun, extremes of temperatures, pesticides and chemicals. Respiratory diseases may result from exposure to dust particles, pesticides and prolonged working in wetlands. Peshane R et al,(21) reported that more than 50% had respiratory problems with cough being the chief symptom. Grain dust and smoke may irritate the respiratory tract, resulting in excessive mucus production and mucosal plug formation that obstructs respiratory pathways, thus precipitating obstructive and restrictive respiratory problems among the workers.

The current study showed that the Quality of Life was good in Physical and Social domains in 52 (57.8%) study participants each, environmental domain 41 (45.6%) and psychological domain 39 (43.3%). QoL is poor in 51(56.7%) in psychological domain, 49(54.4%) in environmental domain and 38 (42.2%) each in physical and social relationships domain. Where as in the study done by Naik D,(6) quality of life domain scores were 100% medium QOL in physical domain and 80%, 46%, 80% respectively in psychological, social and environmental domains, with overall scores of 80% belonging to medium QOL category. This study showed that the mean scores were high in Social and Physical domains with 59.62±20.40 and 57.46±17.11 respectively, while it was 48.33±15.89 in environmental domain and 48.88±17.41 in psychological domain. In an international study done in Indonesia, done by Sinambela WY,(14) QOL was good in all the domains i.e, physical, social, psychological and environmental, but there was a dependence on income and knowledge, particularly in the environmental domain. Diener and Suh(22) report that a tradition is being followed in policy making since long time, wherein economic indicators are mainly used when societies are evaluated. They state that the social indicators and subjective well-being should be included as indicators for evaluating societies, without neglecting them. The reason is that these could have a major effect on the QOL and contribute to a broader understanding within the social ecosystem. Assessment of participant's self-perceived overall Quality of Life showed that the majority of participants, 42 (46.7%), perceived their overall QOL as good and 8 (8.9%) perceived their Quality of Life as very good, both indicating a positive self-perception. Assessment of participant's self-perceived overall satisfaction with their health showed that, 38 (42.3%) felt satisfied and 13 (14.4%) felt very satisfied with their health, while 20 (22.2%) had a neutral opinion, 19 (21.1%) study participants said they were dissatisfied or very dissatisfied with their health.

Overall, the majority of participants are satisfied with their self-perceived health and Quality of Life, but a notable proportion still expresses dissatisfaction, indicating mixed perceptions of health status within the group.

Waged Agricultural workers, who are involved either in traditional farming practices or with modern techniques, are dependent on several conditions to practice efficiently. Heavy workloads, limited control and lack of social support undermine psychosocial well-being, leading to heightened stress, mental health problems, depression and, in extreme cases, suicide.(11)

Good QoL in psychological diseases was significantly associated with lower prevalence of bites, respiratory diseases, and bone and joint diseases, which is consistent with the findings reported by Blanch CG et.al, where a significant

association is seen between QoL and psychological diseases.(23)

In coherence with the current study findings, Antonopolou MD et.al (24) in a rural area of Greece reported that the Physical dimension in QoL was more significantly affected by musculoskeletal complaints.

Similar to the present study, where a significant association was seen with good QoL in the environmental domain with low prevalence of sunstroke and skin diseases, in a study done by Oliveira JCAX(25) in the rural area of Brazil, Sun and noise exposure significantly affected physical and environmental domains, whereas dust exposure was significant in both psychological and physical domains. Agricultural workers having morbidities had lower scores in the domains of QoL(25), which also is seen in our current study.

Studies have shown that several environmental factors affect the quality of life of farmers including weather conditions, time management skills, machinery breakdowns, diseases (animal and plant), market prices for agricultural products, costs for agricultural equipment, financial pressure, government regulations, eligibility for government programs and environmental protection agency regulation and recent negative societal attitudes to farming compromise the quality of life in environmental domain.(11,26)

CONCLUSION & RECOMMENDATION

Agricultural workers experience a considerable burden of morbidities, including psychological disorders, bone and joint disorders, skin diseases, and respiratory illnesses, which adversely affect their quality of life. In the present study, quality of life in all four domains was found to be less than 60%, with poorer scores particularly in the psychological and environmental domains. A significant association was observed between certain morbidities, especially psychological disorders, accidents, bites, and musculoskeletal conditions and with reduced quality of life across various domains. Most of the morbid conditions identified among agricultural workers are preventable through appropriate health education and adoption of occupational health practices. The findings highlight the need for focused preventive and promotive interventions to reduce morbidity and improve quality of life among agricultural workers. Further large-scale prospective and multicentric studies may help in establishing causal associations and strengthening the evidence base.

LIMITATION OF THE STUDY

Only some morbidities could be assessed, while the agricultural workers may suffer from a multitude of conditions. Recall bias may prevent the actual magnitude of morbidity from being fully or accurately reflected. The study being a cross-sectional design, it carries certain inherent limitations leading to a limited understanding of the true temporal relationship within the morbidity pattern and quality of life of agriculture workers, which share a mutual relationship. A small sample size may be a limiting factor in generalizing the results to a larger population.

AUTHORS CONTRIBUTION

All authors have contributed equally.

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Nil

CONFLICT OF INTEREST

There is no conflict of interest.

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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