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REPRODUCTIVE HEALTH OF WOMEN WORKING IN INDUSTRIAL ENTERPRISES AND WAYS TO IMPROVE IT

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Abstract:

This article examines the reproductive health of women employed in industrial enterprises and analyzes the key factors affecting it. Particular attention is given to the adverse impact of unfavorable working conditions, including exposure to chemicals, industrial dust, noise, vibration, as well as high physical and psycho-emotional stress, which negatively influence the female body, especially the reproductive system.

The study also explores methods for assessing reproductive health, as well as the importance of preventive measures and regular medical monitoring. The findings indicate that improving working conditions, optimizing the occupational environment, organizing systematic medical screenings, and promoting a healthy lifestyle are essential for protecting women's health. In addition, the article proposes comprehensive approaches and practical recommendations aimed at improving reproductive health outcomes among women workers

Keywords: Reproductive health, occupational health, women workers, industrial enterprises, workplace exposure, occupational risk factors, industrial hygiene, reproductive risks, preventive measures, medical screening, psychosocial stress, workplace safety, occupational hazards, health promotion.

RELEVANCE

Currently, protecting women's reproductive health is one of the priority areas of the global healthcare system. According to the World Health Organization (WHO), reproductive health determines not only individual well-being but also the demographic and social stability of society. Therefore, studying the health of women employed in the industrial sector is recognized as a pressing scientific issue.

In recent years, studies indexed in Scopus and Web of Science have confirmed that industrial and occupational factors have a significant negative impact on the female reproductive system. In particular, the study by Sunil Kumar et al. [4] scientifically substantiates that heavy metals (lead, cadmium, mercury), pesticides, and organic solvents exert direct toxic effects on the reproductive system, leading to hormonal disorders, oxidative stress, and decreased fertility.

Additionally, according to a scoping review conducted by Rina Hariniaina Razafimahefa et al. [5], menstrual cycle disorders, high-risk pregnancies, and reproductive complications are widespread among women working in the oil and gas and mining industries, mainly due to chemical and physical factors.

Furthermore, the findings of a study by Nazanin Izadi et al. [3] (BMC Women's Health, 2024) indicate that pregnancy progression and birth outcomes significantly worsen in women exposed to occupational hazards. In particular, chemical and physical workloads in the workplace directly affect reproductive outcomes.

Research conducted by M. K. Gainullina et al. [2] revealed that women working in industrial enterprises have higher rates of menstrual disorders, pregnancy pathologies (gestosis, placental insufficiency), and morbidity among newborns. This indicates the complex and long-term effects of industrial factors.

Modern systematic analyses also confirm the relevance of this issue. A systematic review conducted by researchers from Shahid Beheshti University [6] reported that physical and chemical factors in industrial settings have pathophysiological effects on the reproductive system, including DNA-level changes and hormonal imbalances.

At the same time, studies by S. A. Babanov [1] emphasize that the management of women's reproductive health under occupational risk conditions remains insufficiently addressed, particularly due to the lack of comprehensive preventive systems.

The above scientific evidence shows that the reproductive health of women working in industrial enterprises is shaped by multiple harmful factors, making this issue globally relevant. Therefore, conducting comprehensive research in this area, identifying risk factors, and developing effective preventive and organizational measures are of significant scientific and practical importance.

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RESEARCH OBJECTIVE

The aim of this study is to assess the reproductive health of women working in industrial enterprises, identify occupational and social factors affecting it, and develop evidence-based recommendations to improve reproductive health.

MATERIALS AND METHODS

1. Study Object and Sample

The study object consisted of women working in industrial enterprises. The research was conducted among women aged 18–45 working in knitwear production and other light industry enterprises in Tashkent. A stratified random sampling method was used to select the study sample. As a result, data on the reproductive health of 100 employees were collected.

2. Research Methods

The following scientific methods were applied in the study:

- **Questionnaire survey and interviews** – to determine working conditions, work experience, health status, and reproductive history of employees.
- **Medical examination and laboratory diagnostics** – hormonal levels (FSH, LH, prolactin), menstrual cycle status, pregnancy history, and birth outcomes were analyzed.
- **Epidemiological methods** – to study the relationship between occupational risk factors and reproductive disorders.
- **Statistical analysis** – SPSS 26 software was used for data processing. Descriptive statistics (mean, standard deviation), as well as Pearson's chi-square test and correlation analysis, were applied to determine relationships between variables.

3. Study Period

The study was conducted from January to June 2025. During this period, individual interviews, medical examinations, and laboratory tests were carried out for all participants.

4. Data Sources

Data were collected from the following sources:

- enterprise medical records and health registers;
- scientific articles and research findings (Scopus, Web of Science, PubMed);
- international guidelines and standards (WHO, ILO).

5. Research Methodology

The study methodology was based on a mixed-method approach:

- **Quantitative component** – statistical analysis of reproductive health indicators and occupational risk factors;
- **Qualitative component** – assessment of workers' subjective perceptions and psycho-emotional impacts related to working conditions.

This methodology enhanced the reliability and practical significance of the study results.

RESULTS

A total of 100 female employees working in garment manufacturing enterprises participated in the study. The respondents were women of reproductive age. In terms of age distribution, the 26–30 age group was predominant (32%), followed by the 21–25 (24%) and 31–35 (18%) age groups. These indicators confirm that the workforce in light industry mainly consists of young and middle-aged women.

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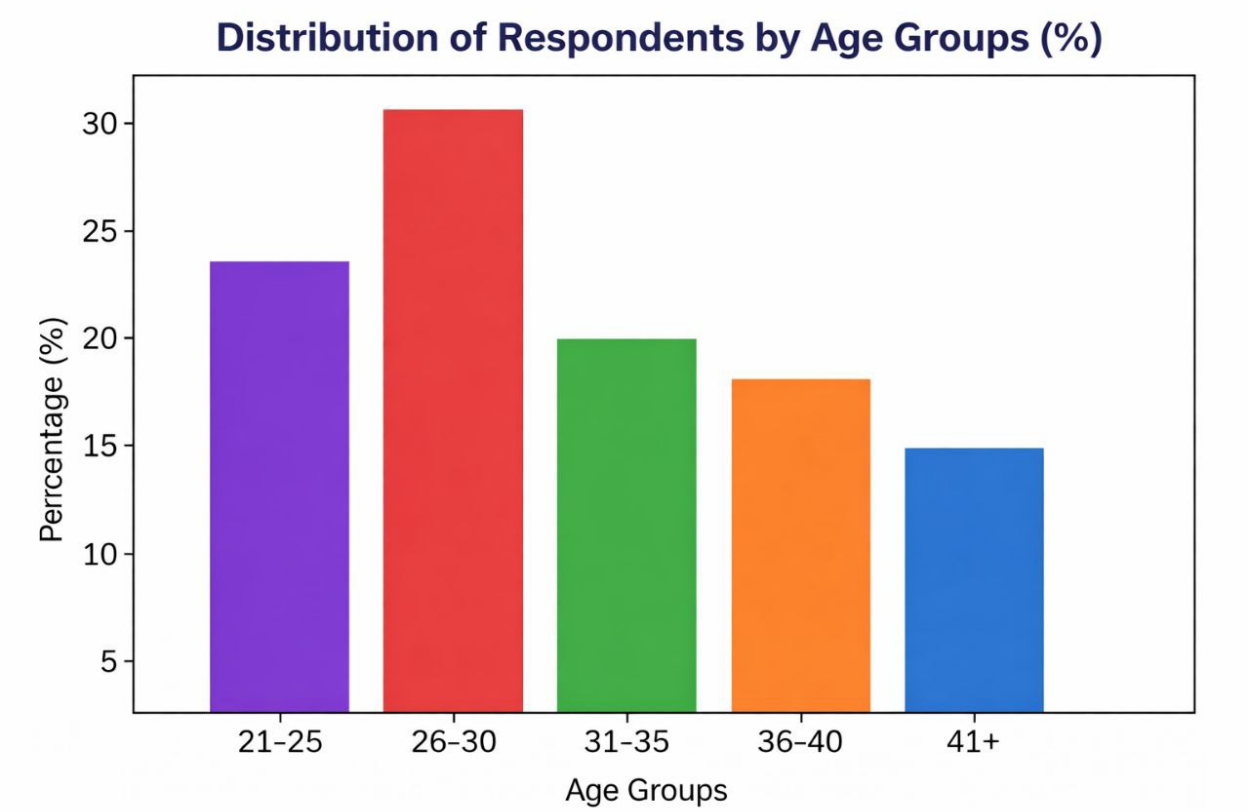

Marital Status: 58% of respondents are married, 30% are unmarried, 8% are divorced, and 4% are widowed, providing an overall view of their family responsibilities and reproductive status.

Education Level: 48% of respondents have higher education, 30% have vocational/secondary specialized education, 14% hold a master's degree, and 8% have secondary education, which may contribute to a higher level of health awareness.

Number of Children: 62% of respondents have 1–2 children, 30% have no children, and the remaining have three or more children.

Assessment of Harmful Workplace Factors by Respondents (n=100)
(Multiple responses were allowed)

Harmful Factor	Absolute Number (n)	Percentage ± Error (P ± m, %)
Prolonged Sitting	58	58,0± 4,9
Dust	54	54,0 ±4,9
Noise	47	47,0± 4,9
Standing for Long Periods	46	46, ± 4,9
Lifting Heavy Loads	40	40,0± 4,9

Note: More than half of the women surveyed (58.0 ± 4.9%) reported working in a constantly seated position. From a medical perspective, prolonged static postures can cause blood stasis in the pelvic organs (venous stasis), which is a direct risk factor leading to gynecological disorders and impaired reproductive function. Additionally, 40% of respondents reported lifting heavy loads, which represents a critical strain on the female body.

These results indicate that mechanical and visual workloads, dust exposure, and prolonged standing in light industry may serve as potential risk factors for reproductive health.

Ventilation Quality: 52% of respondents assessed the ventilation as average, 26% as good, 14% as poor, and 8% reported no ventilation.

Work Fatigue Level: 56% of respondents reported an average level of fatigue, while 28% reported high fatigue.

Psychological Stress: 38% of respondents experienced average psychological stress, and 22% experienced high stress.

Structure of Gynecological and Extragenital Diseases Identified among Respondents (n=100)

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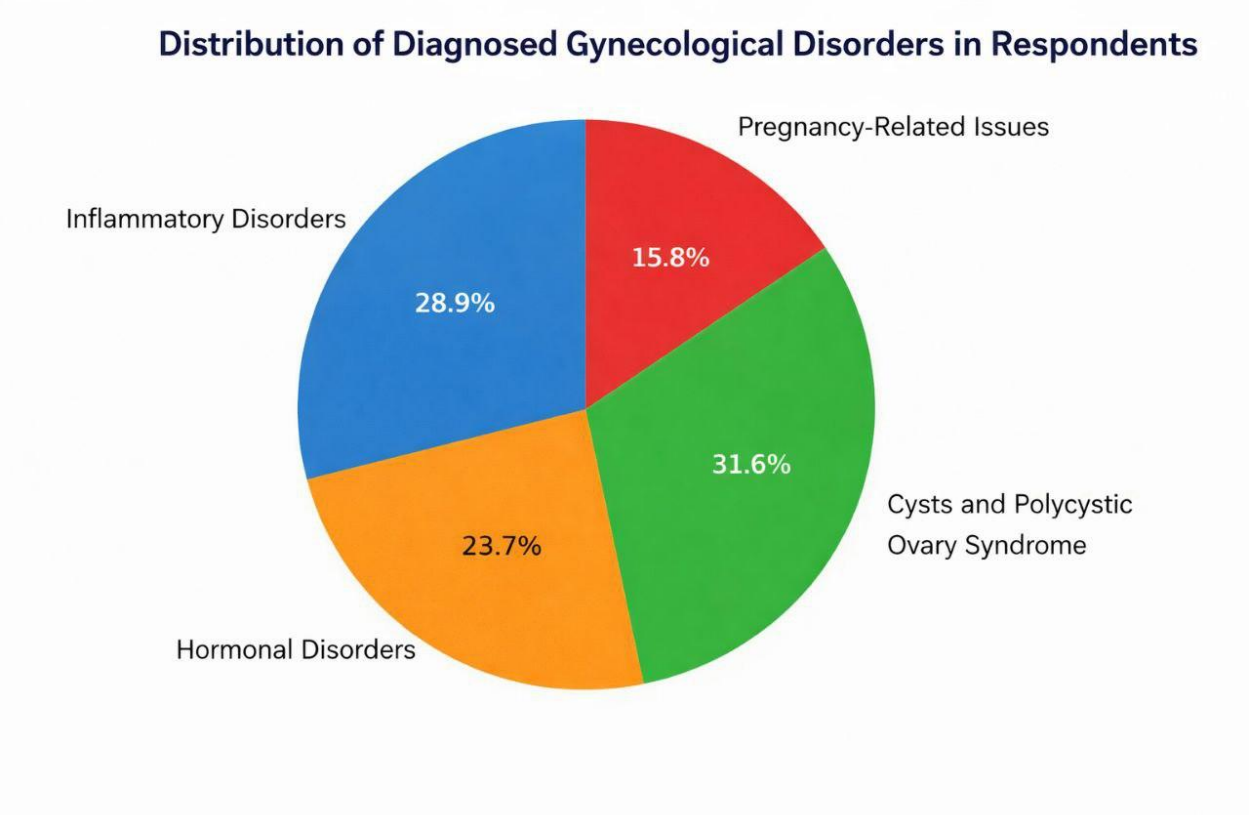
Disease Type	Absolute Number (n)	Percentage ± Error (P ± m, %)
Inflammatory Diseases	22	22,0± 4,1
Hormonal Disorders	18	18,0 ±3,8
Cysts and Polycystic Conditions	24	24,0± 4,2
Pregnancy-Related Problems	12	12,0±3,2
Extragenital Diseases		
Anemia	32	32,0±4,6
Arterial Hypertension	14	14,0±3,4

Note: Among the respondents, gynecological pathologies occupy a leading position. This condition may be associated with an unfavorable workplace microclimate, such as cold exposure and poor ventilation. Analysis of extragenital diseases indicates that one in three women suffers from anemia. A high prevalence of anemia reduces the compensatory capacity of the female body, increasing its susceptibility to harmful workplace factors.



Family Reproductive History: Among the respondents, 28% reported that reproductive diseases occurred in their family history. This indicates a genetic predisposition.

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