ISSN. 2338-7475
E-ISSN. 2620-7869
Hearty
Jurnal Kesehatan Masyarakat
Berinan, Tulus, Sepenuh Hati,Berbesar Hati, Jujur, Sehat dan Kuat
Vol. 14 No. 1, Februari 2026, Hal. 210-222

PARENTAL SMOKING FACTORS AND THEIR IMPACT ON ACUTE RESPIRATORY INFECTION (ARI) IN CHILDREN UNDER FIVE: LITERATURE REVIEW

Kalisha Adeta Salsabila, Faiza Athallah Salman, Rizki Aprilia Putri, Talitha Rafa Maritza *, Najwa Aulia Salsabila, Chahya Kharin Herbawani
Departemen Kesehatan Masyarakat, Fakultas Ilmu Kesehatan,
Universitas Pembangunan Nasional Veteran Jakarta
Jl. Raya Limo, Kecamatan Limo, Kota Depok, Jawa Barat 16515, Indonesia
Email: talitharafa0904@gmail.com

Abstract

Acute Respiratory Infection (ARI) is one of the leading causes of morbidity and mortality among children under five worldwide, including in Indonesia. A significant risk factor is exposure to cigarette smoke from parents, which has been shown to increase the likelihood of ARI in young children. This study aims to examine the relationship between exposure to cigarette smoke and the incidence of ARI in children under five, as well as to explore the factors that contribute to parental smoking behavior. The type of research used in this article is a literature review, structured according to the PRISMA methodology. The article identification process was carried out through three databases from PubMed, ScienceDirect, and GARUDA. From a total of 1.235 articles identified, a selection and analysis process was conducted, resulting in 12 articles that met the eligibility criteria for further review. The literature review of these 12 articles indicates a clear association between exposure to cigarette smoke from parental and household smoking and the prevalence of ARI in children under five. Several contributing factors to parental smoking, including low levels of knowledge, smoking culture, high stress levels, socioeconomic conditions, and weak enforcement of tobacco regulations, have been identified as key drivers that indirectly increase the risk of (ARI) in children under five. There is a notable relationship between exposure to cigarette smoke and the incidence of ARI in children under five, which is influenced by parental smoking patterns.

Keywords: Acute Respiratory Infection (ARI), Children Under Five, Factors, Parental Smoking

Introduction

Acute Respiratory Infection (ARI) is one of the leading causes of morbidity and mortality among children under five years old worldwide (1), contributing to around 15% of all deaths in this age group globally (2). ARI accounted for a significant portion of the 4.8 million deaths among children under five in 2023, making it one of the main causes of death in this age group (3). In Indonesia, ARI is a common illness that affects both the upper and lower respiratory tracts and is caused by viruses, bacteria, or fungi (4). ARI is the leading cause of death among under-fives in Indonesia, with a prevalence of 9.3% in 2018 (5). Young children are highly susceptible to ARI due to their underdeveloped immune systems (6). If not properly treated, ARI in under-fives can lead to serious complications, such as pneumonia, meningitis, respiratory distress, and even death (7). Several factors contribute to the incidence of ARI in under-fives, including family smoking habits, receiving vitamin A less than twice a year, exclusive breastfeeding for less than six months, overcrowded living conditions, and incomplete immunization status (8).

Submitted: July-2025 Received: September-2025 Available Online: February-2026

It has been shown that passive smokers represent the highest percentage of ARI cases, at 50.5%. This indicates that exposure to cigarette smoke from others, particularly within the home, has a significant impact on respiratory health, especially for non-smoking family members like young children (9). A study reported that 26 under-fives (50%) who were exposed to cigarette smoke for ≥ 20 minutes per day experienced ARI more than three times per year. In contrast, only 1 under-five (21.5%) exposed to smoke for ≤ 20 minutes per day experienced ARI less than three times per year. These findings demonstrate that the duration of smoke exposure influences the frequency of ARI occurrences in under-fives. The longer children are exposed to cigarette smoke daily, the greater their risk of contracting ARI, as smoke can damage the respiratory tract's defense system (10).

ARI in young children has a strong correlation with smoking habits within the family. This is due to the nicotine and various toxic substances in cigarette smoke that can be inhaled by children and harm their respiratory systems (11). Continuous exposure can cause breathing problems and worsen the onset of acute respiratory infections and lung disorders in adulthood (12). Cigarette smoke exposure in under-fives can damage respiratory tract cilia and weaken the immune system, making them more vulnerable to ARI. Nicotine in cigarette smoke interferes with interferon production, antigen recognition, and dendritic cell function, all of which are vital for fighting infections. As a result, mucus builds up, inflammation occurs, and infections can easily spread to the lungs. This exposure also damages cilia, which filter out foreign particles, leading to an overall decline in a child's immunity (13).

Smoking behavior is influenced by various factors, both internal and external. The urge to smoke may arise due to advertisements, low cigarette prices, social solidarity, or psychological reasons such as stress relief (14). According to the Global Adults Tobacco Survey, about 34.5% of adults, or approximately 70.2 million people, use tobacco products. This includes 65.5% of men and 3.3% of women. Furthermore, the use of electronic cigarettes has drastically increased over the past ten years, from 0.3% in 2011 (the previous GATS survey year) to 3% in 2021 (15). Therefore, this study aims to determine the relationship between cigarette smoke exposure and the incidence of ARI in under-fives, as well as the factors that drive smoking behavior among parents.

Method

This literature review was conducted following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to systematically identify and analyze factors influencing parental smoking behaviors and their association with the incidence of acute respiratory infection (ARI) in children under five years of age. Relevant studies were sourced from both national and international literature through three primary electronic databases: PubMed, ScienceDirect, and GARUDA.

A structured search strategy was employed using Boolean logic, with a focus on the “AND” operator to refine and narrow the search results. In PubMed, keyword combinations such as “parental smoking AND acute respiratory infections” and “child under five AND acute respiratory infections” were used. For ScienceDirect, the terms “secondhand smoke AND acute respiratory infection AND under-five children” were applied. In the GARUDA database, the search utilized the Indonesian terms “orang tua merokok DAN balita DAN ISPA.”

The initial screening process involved applying automated filters provided by each database. Studies were excluded if they met any of the following criteria: published prior to 2020, not freely accessible in full-text format, categorized as literature reviews or systematic reviews, or not based on original clinical research. These exclusion criteria were implemented to ensure the inclusion of recent and primary research studies relevant to the review objectives.

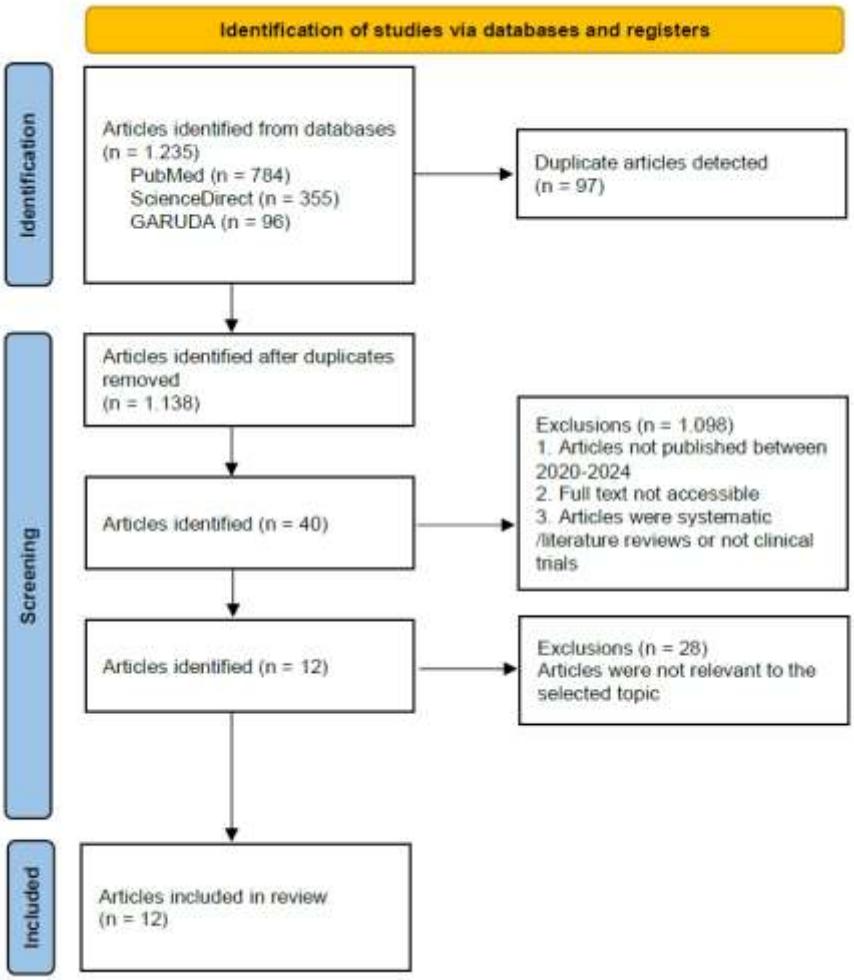

Figure 1 PRISMA Diagram Flow

Results

Based on the search results obtained using the predetermined keywords across the three selected databases, a total of 1.235 articles were identified, consisting of 784 articles from PubMed, 355 articles from ScienceDirect, and 96 articles from GARUDA. An initial screening process identified 97 duplicate articles, which were subsequently removed.

The remaining articles were then evaluated using predefined exclusion criteria, resulting in the exclusion of 1.098 articles from further analysis. Following this selection process, 40 articles met the initial inclusion criteria and were further examined based on their titles, abstracts, and full content. As a result, 12 articles were deemed most relevant and appropriate for inclusion in this literature review.

Table 1 Summary Research Result

No	Author, Year	Title	Objective	Design	Sample	Result
1	Mayasari Rahmadhani, 2021	The Correlation of Family Members Smoking Habits with Acute Respiratory Infection Cases in Toddlers at Pratama Sehati Husada Clinic, Sibiru-Biru Sub-district	To identify the relationship between family smoking habits and ARI incidence in under-five children at Klinik Pratama Sehati Husada, Sibiru-biru, in 2020	Descriptive analytic research with a case-control approach	50 under-five children without ARI and 50 under-five children with ARI	Smoking habits among family members had a significant relationship with the occurrence of Acute Respiratory Infections (ARI) in children under five, with a p-value of 0.001 ($p < 0.05$)
2	Ni Putu Ayu Juniantari, Gusti Ngurah Kusuma Negara, Luh Adi Satriani, 2023	The Relationship Between Parental Smoking Behavior and the Incidence of Acute Respiratory Infections (ARI) in Children Aged 1–4 Years	To examine the association between parental smoking habits and ARI incidence in children aged 1–4 years at Selat Public Health Center	Analytical research using a cross-sectional approach	258 parents with children aged 1–4 years	Significant and strong positive correlation between parental smoking habits and the incidence of ARI in children aged 1–4 years at Selat Health Center. The p-value was 0.001, and the correlation coefficient ($r = 0.761$) indicated a strong relationship (in the range of 0.60–0.799)
3	Eny Pemilu Kusparlina, Eddy Wasito, 2023	Family Members Smoking Habits and the Duration of ARI Treatment in Under-Five Children	To analyze the relationship between family smoking habits and the duration of ARI treatment in under-five children	Observational analytic research with a cross-sectional approach	60 under-five children selected randomly	Smoking habits are largely caused by low public awareness of the dangers of smoking. In addition, the ease of obtaining cigarettes at affordable prices makes it easier for people to buy cigarettes without worrying about high costs
4	Wahyu Tri Astuti, Siswanto, 2022	Family Members Smoking Habits and the Incidence of Acute Respiratory Infections (ARI) in Children Aged 1–5 Years	To assess the link between smoking habits within the household and ARI incidence in children aged 1–5 years	Descriptive analytic research using a cross-sectional approach	82 mothers with under-five children	Children exposed to cigarette smoke had a much higher proportion of ARI cases (65.8%) compared to those not exposed to cigarette smoke (3.67%)

5	Husni Lasabu, Sri Marnianti Irnawan, Ni Nyoman Elfiyunai, 2023	Relationship Between Family Members Smoking Habits and the Incidence of Acute Respiratory Infections (ARI) in Toddlers.	To determine the association between family member' smoking habits and ARI incidence in under-five children in Salangano Village	Quantitative research with a cross-sectional approach	44 parents of under-five children visiting Totikum Health Center, selected using purposive sampling	There was a significant relationship between smoking habits of family members and the incidence of ARI in under-five children, with a p-value of 0.002
6	Ni Made Heni Wahyuni, Ni Ketut Ayu Mirayanti, Niken Ayu Merna Eka Sari, 2020	Relationship of Parents Smoking Behavior with the Event of Acute Respiratory Infection in Infants at Tabanan UPTD Puskesmas III	To examine the relationship between parental smoking habits and ARI incidence in under-five children at UPTD Tabanan III Health Center	Correlational analytic research using a cross-sectional approach	68 parents at UPTD Tabanan III Health Center, selected using purposive sampling	75% of parents had a smoking habit, and the incidence of ARI among their children reached 63.2%. It was also found that smoking behavior is often influenced by the surrounding environment
7	Shinta Christy Damayanti, Siti Rusminarni, Budi Antoro, 2023	The Relationship Between Parental Smoking Behavior and the Incidence of Acute Respiratory Infections in Toddlers at the Inpatient Community Health Center Puskesmas Banjar Agung, South Lampung Regency	To assess the relationship between parental smoking behavior and ARI incidence in under-five children at UPTD Banjar Agung Inpatient Health Center, South Lampung Regency, in 2023	Quantitative research with a cross-sectional approach	67 parents of under-five children visiting UPTD Banjar Agung Inpatient Health Center, South Lampung Regency, selected using purposive sampling	Most parents who smoked (49 individuals or 79.1%) had children with ARI (47 children or 70.1%). Based on the Chi-Square statistical test, the p-value was 0.000 ($p < 0.05$), indicating a significant relationship
8	Mamta Verma, K. Sangeeta, Bhupendra Kumar Verma, Dharmendra Kumar Dubey, Mukul Mondal, Mousumi Nath Mazumder, Hafiz T.A. Khan, Vivek	The association between anti-smoking legislation and prevalence of acute respiratory illnesses in Indian children	To evaluate whether national and state-level anti-smoking laws in India affect ARI incidence in children under four, particularly related to indoor smoke exposure	Cross-sectional survey data from NFHS-4 and performs bivariate and multivariate logistic regression analysis	190.898 children under the age of four who were alive at the time of the survey	Children exposed to cigarette smoke had a 16% higher risk of developing ARI (Odds Ratio = 1.16; 95% Confidence Interval). Children aged 1–2 years had a 1.57 times greater risk of ARI compared to those aged 3–4 years

	Verma, 2024					
9	Masako Yamada, Minato Nakazawa, 2024	Status of home-based secondhand smoke exposure among children and its association with health risks in Japan	To assess household smoke exposure, including HTPs and e-cigarettes, and mothers' perceptions of SHS prevention efforts in relation to child health risks in Japan	Cross-sectional study design	379 mothers with children under five years old, recruited through a national online survey panel in Japan	Children living in households with smokers had higher risks of developing respiratory illnesses ($p = 0.049$), ear infections (otitis media, $p = 0.008$), and dental caries ($p = 0.001$)
10	Anuna Vinod, Resmi S. Kaimal, 2023	Study on acute respiratory infection in children aged 1 year to 5 years-A hospital-based cross-sectional study	To identify the frequency of ARI in children aged 1–5 in the past year at a tertiary hospital immunization clinic and analyze its association with epidemiological, sociodemographic, nutritional, and immunization factors	Cross-sectional approach	100 under-five children visiting the immunization clinic at Lourdes Hospital, a tertiary care hospital in Kochi, Kerala, India	Family history of ARI increases the risk of ARI in children. Other risk factors include exposure to cigarette smoke, biomass fuel, cold and rainy weather, and not being immunized against pneumococcus, Hib, measles, or not receiving vitamin A, all of which make children more vulnerable to ARI
11	Leka Lutpiatina, Lilis Sulistyorini, Hari Basuki Notobroto, Reynie Purnama Raya, Ricko Darmadji Utama, Anny Thuraidah, 2022	Multilevel Analysis of Lifestyle and Household Environment for Toddlers With Symptoms of Acute Respiratory Infection (ARI) in Indonesia in 2007, 2012, and 2017/ 2022	To analyze the differences in prevalence and determinants of ARI in children under five in Indonesia in 2007, 2012, and 2017	Quantitative analysis research using statistical methods, including bivariate and multivariate analysis	Under-five children (ages 0–59 months) with data drawn from the Indonesia Demographic and Health Survey (IDHS) for the years 2007, 2012, and 2017	The prevalence of ARI in children under five in Indonesia changed from 2007 to 2017. The risk of ARI was lower if the caregiver was the child's mother or if the caregiver was aged 30 years or older
12	Sunita Dharel, Binjwala Shrestha Prem Basel,	Factors associated with childhood pneumonia and care seeking practices in Nepal: further analysis of 2019	To provide evidence on factors associated with pneumonia and offer recommendations for national child	This research uses a cross-sectional survey method with systematic random	6.749 under-five children unweighted samples, 6.658	Children aged 0–23 months were 1.5 times more likely to develop pneumonia (Adjusted Odds

	2023	Nepal Multiple Indicator Cluster	health programs to improve pneumonia care and support child survival	sampling of households with children under five, using secondary data from Nepal MICS 2019	children were included in the analysis, with 139 showing ARI symptoms in the two weeks before the survey	Ratio/AOR = 1.5), children living in rural areas were 1.9 times more at risk (AOR = 1.9), children with low birth weight were 2.3 times more at risk (AOR = 2.3), and children whose mothers smoked were 2.5 times more at risk (AOR = 2.5) compared to their respective comparison groups

Discussion

Parental behavior plays an important role in determining a child's health condition, especially regarding the risk of Acute Respiratory Infection (ARI). The prevalence of active smokers in Indonesia shows a continuous increasing trend over time. According to data released by the Ministry of Health through the 2023 Indonesian Health Survey (SKI), the number of individuals classified as active smokers is estimated to have reached around 70 million people. The high incidence of ARI has driven the implementation of the Global Action Plan in 2013, which aims to reduce mortality caused by this disease globally (16).

A study conducted in 2022 showed significant improvements in the quality of maternal and child health services in Indonesia from 2012 to 2017. However, the study also revealed that socio-demographic factors have a considerable influence on the incidence of ARI in children under five. Specifically, family socioeconomic status, parental education levels, and access to healthcare services all contribute to children's vulnerability to ARI (17).

Children exposed to cigarette smoke have a 4,2 times higher risk of experiencing Acute Respiratory Infection compared to children not exposed to cigarette smoke (18). Protection from exposure to air pollution, especially cigarette smoke in the living environment, has been proven to reduce the likelihood of respiratory infections. These findings emphasize the important role of parents in adopting healthy lifestyles to prevent ARI from an early age (19).

The Relationship Between Parental Smoking Behavior and the Incidence of Acute Respiratory Infection (ARI)

Research conducted in India indicates a very high prevalence of Acute Respiratory Infection (ARI) among toddlers in rural areas, reaching 85%, highlighting a strong correlation between environmental conditions and children's vulnerability to respiratory diseases. Exposure to cigarette smoke at home, particularly from parents, increases the risk of ARI in children from smoking households compared to those from non-smoking families. National data further confirm that the risk of ARI in toddlers, especially those aged 1-2 years in rural areas, increases by up to 1,57 times due to exposure to cigarette smoke. Policy support is crucial, as data from the NFHS-4 survey (2015-2016) shows that ARI prevalence is higher in regions with only one type of anti-smoking legislation compared to areas with dual regulatory frameworks. Children exposed to smoke at home have a 16% higher risk

of developing ARI, indicating that early childhood is a critical period with a very high risk of infection from cigarette smoke (20–22).

Further studies emphasize that maternal smoking habits significantly increase the risk of pneumonia in children. Research shows that children whose mothers are active smokers have a 2,5 times higher likelihood of contracting pneumonia compared to children of non-smoking mothers (Adjusted Odds Ratio [AOR] = 2,5; Confidence Interval [CI] 1,1–5,7). Not only maternal smoking status but also the duration and intensity of the child's exposure to smoking parents have been shown to worsen the respiratory health of children. Consistent findings demonstrate a strong correlation between parental smoking (both direct exposure at home and indirect exposure through the social environment) and the incidence of ARI and pneumonia in toddlers (23). It was found that children living in households with smokers have a higher risk of respiratory problems such as chronic cough, asthma, otitis media, pneumonia, and upper respiratory tract infections (24).

A study in Japan revealed that 31,1% of children were exposed to cigarette smoke at home, mostly from mothers and family members using conventional cigarettes, electronic cigarettes, or heated tobacco products. The study also found that maternal perception of the dangers of cigarette smoke significantly affects exposure levels. Mothers who smoke or live with smokers tend to underestimate the importance of avoiding smoke exposure for their children. This exposure was significantly associated with increased respiratory illnesses in children ($p = 0,049$) (23). Smoking behavior in family members, particularly parents, has serious health implications for children, especially toddlers who are vulnerable to respiratory diseases. Smoking in the home environment causes children to become passive smokers, unprotected from harmful chemicals in cigarette smoke. Cigarette smoke contains thousands of toxic chemicals such as nicotine, carbon monoxide, and aromatic hydrocarbons, which disrupt the respiratory system of children and increase the risk of ARI (25).

Research at Selat Community Health Center showed a significant relationship between parental smoking behavior and the incidence of ARI in toddlers aged 1-4 years. Among 258 respondents, most parents exhibited moderate smoking behavior (49,2%), with the incidence of ARI in their children also categorized as moderate (52,3%). Statistical analysis using Spearman's Rho yielded a p-value of 0,001 and a strong positive correlation ($r = 0,761$), indicating that higher parental smoking intensity corresponds to a higher risk of ARI in toddlers. Children exposed to parental smoke tend to experience ARI 4-6 times per year. Therefore, controlling smoking habits in the child's living environment is a crucial preventive measure, particularly for vulnerable age groups such as toddlers whose immune systems and respiratory organs are still developing (26).

Research conducted in Sidosari Village, Salaman Sub-district, Magelang Regency, shows that parents' smoking habits inside the home are significantly correlated with the incidence of Acute Respiratory Infections (ARI) in toddlers. Exposure to cigarette smoke in the home environment, especially from parents or close family members, directly increases the risk of ARI in children aged 1–5 years. The study results showed that 65.8% of toddlers exposed to cigarette smoke experienced ARI, while only 3.67% of toddlers not exposed to cigarette smoke suffered from ARI, indicating a statistically significant difference ($p = 0.000$) (17)

Research also found that the smoking habits of family members are significantly associated with the incidence of ARI in toddlers. Among 44 respondents studied in Salangano Village, it was found that toddlers exposed to cigarette smoke at home had a higher tendency to suffer from ARI compared to those who were not exposed. Statistical analysis showed a p-value of 0.002, indicating a significant relationship between family smoking habits and ARI incidence (27).

These findings are supported by research at Banjar Agung, South Lampung. Which also showed a significant relationship between parental smoking behavior and the incidence of ARI in toddlers. In this study, 90.7% of toddlers living with smoking parents experienced ARI, and the chi-square test results showed a p-value of 0.000, indicating a highly significant relationship (28).

Factors Driving Smoking Behavior

Smoking behavior among family members, particularly within the household environment, results from a complex interplay of various social and psychological determinants. A study explain that smoking habits are influenced not only by an individual's level of health literacy but also closely associated with cultural norms, educational background, socioeconomic status, residential environment, personality traits, stress levels, and accessibility to tobacco products (29). Collectively, these factors contribute to entrenched behavioral patterns that are challenging to modify, especially when smoking becomes a habitual activity performed routinely after meals, during work, or in social settings.

Furthermore, the high prevalence of smokers in Indonesia is compounded by the affordability of cigarettes and the addictive nature of their constituents. Empirical evidence indicates a positive correlation between the quantity of cigarette consumption (e.g., exceeding twenty cigarettes per day) and the severity of health risks faced by toddlers exposed to secondhand smoke. This circumstance complicates smoking cessation efforts, particularly when associated with occupational stress and social responsibilities as the primary income provider (30). Extant research identifies at least six principal factors motivating parental smoking behavior, detailed as follows:

1. Low Level of Knowledge
   Numerous prospective fathers demonstrate inadequate understanding regarding the detrimental health effects of tobacco use on themselves, pregnant women, fetuses, and neonates. Consequently, smoking practices often persist before and after pregnancy. Permissive attitudes toward indoor smoking, including in areas such as kitchens and balconies and lack of restrictions on direct contact with children post-smoking exacerbate the problem. Moreover, the advent of alternative tobacco products, including heated tobacco products (HTPs) and electronic cigarettes, often perceived as less harmful, paradoxically heightens risk due to the presence of harmful substances in these products. The general population's limited awareness of the hazards associated with exposure to emissions from these alternatives contributes to increased usage within domestic settings (23,31).
2. Perception that Smoking Outdoors Protects Family from Smoke Exposure
   While some prospective fathers recognize the dangers of tobacco smoke to pregnant partners and unborn children, this awareness often leads to a false sense of security. Many believe that smoking outside the home or at certain times is enough to protect their families. This misconception underscores the urgent need for better educational efforts to explain the true risks of tobacco smoke including secondary and third-hand exposure, which can occur even without indoor smoking. Parents have an important role in the family not only as educators and role models but also as protectors, shielding their loved ones from exposure to cigarette smoke in the surrounding environment (31,32).
3. Cultural Norms Entrenched in Society
   In certain contexts, such as China, smoking is culturally embedded with significant social functions, including facilitating interpersonal interactions, where it is regarded as a normative daily activity. Consequently, smoking behavior is widely accepted and tolerated, including by partners. In some cultures, smoking is linked to notions of maturity and masculinity. Additionally, socioeconomic pressures and stress contribute to tobacco use, with many individuals resorting to smoking as a coping mechanism under economic hardship (23,31).
4. Limited Family Support
   Research consistently demonstrates that emotional support and encouragement from partners play a crucial role in motivating prospective fathers to reduce or quit smoking. The presence of a supportive partner enhances awareness of the adverse health impacts of smoking on the smoker, spouse, and unborn child. Open communication and positive reinforcement bolster psychological support, thereby increasing motivation for behavioral change. Support mechanisms include reminders, praise for cessation efforts, and joint engagement in healthy lifestyle practices (25,33).

5. Experience in Fatherhood Role
   Men anticipating fatherhood for the first time often demonstrate a stronger motivation to quit smoking, driven by a desire to protect the health of their partners and unborn children. This behavioral shift is closely tied to evolving perceptions of masculinity during the transition to fatherhood, marked by increased responsibility and the anticipation of new familial roles. The aspiration to be seen as a good father acts as a powerful motivator for smoking cessation, especially among first-time expectant fathers. Many report that quitting smoking benefits not only the health of their families but also improves their self-image and enables them to serve as positive role models for their future children (31,34).
6. Weaknesses in Smoking Regulation
   Policy enforcement and regulatory frameworks significantly affect smoking behaviors. Studies indicate that regions with only a single anti-smoking policy exhibit higher smoking prevalence compared to regions enforcing multi-level regulations. Insufficient or inconsistent regulatory measures foster environments where individuals feel less constrained in smoking, including within their homes. Since smoking behavior arises from interactions between individual, familial, social, and structural factors, comprehensive interventions must incorporate education, psychosocial support, cultural norm transformation, and regulatory strengthening. Particularly, policies prohibiting smoking indoors in households with children are critical and warrant implementation across various administrative levels (23,35).
7. Gender and Social Role as Head of Household
   The findings of the study indicate that the majority of respondents were male (95.6%), who, both socially and culturally, are typically regarded as the heads of households. In many communities, men are perceived as more dominant in decision-making processes, including those related to lifestyle choices. Smoking among men is often considered socially acceptable and is even perceived as a symbol of masculinity and maturity. This social perception may contribute to higher smoking prevalence among men, regardless of whether they migrate to areas with higher or lower overall smoking rates. This suggests that gender norms and the sociocultural environment play a significant role in influencing smoking behaviors, with men being more susceptible across different settings due to persistent cultural associations between smoking and masculinity (36,37).

Conclusion

There is a significant association between parental smoking habits and an increased risk of Acute Respiratory Infection (ARI) in under-five children. This risk rises with the frequency and duration of smoking in the household. Factors contributing to parental smoking behavior include Low Level of Knowledge, Perception that Smoking Outdoors Protects Family from Smoke Exposure, Cultural Norms Entrenched in Society, Limited Family Support, Experience in Fatherhood Role, Weaknesses in Smoking Regulation, Gender and Social Role as Head of Household. Given that children's respiratory systems are still developing, they are particularly vulnerable to these pollutants. Therefore, parents should avoid smoking inside the house or near their children, increase their knowledge about the dangers of cigarette smoke, implement smoke free home rules, support the enforcement of smoke free area regulations, and address patriarchal norms that tolerate smoking by promoting shared responsibility and gender-equitable health values within the family. In this way, children's respiratory health can be better maintained, and the risk of ARI can be minimized.

References

[1] Lestari DA, Adisasmita AC. Berat Badan Lahir Rendah (BBLR) sebagai Determinan Terjadinya ISPA pada Balita Analisis SDKI Tahun 2017. Jurnal Epidemiologi Kesehatan Indonesia. 2021 Sep 20;5(1). doi:10.7454/epidkes.v5i1.4083;

[2] WHO. Children aged <5 years with ARI symptoms taken to a health facility (%) [Internet]. [cited 2025 May 25]. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/70

[3] WHO. Child mortality and causes of death [Internet]. [cited 2025 May 25]. Available from: https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/child-mortality-and-causes-of-death

[4] Kemenkes RI. Direktorat Promosi Kesehatan dan Pemberdayaan Masyarakat. 2023 [cited 2025 May 6]. Mengenali Gejala ISPA dan Tindakan yang Perlu Dilakukan. Available from: https://ayosehat.kemkes.go.id/mengenali-gejala-ispa-dan-tindakan-yang-perlu-dilakukan

[5] Kemenkes RI. Laporan Riset Kesehatan Dasar Provinsi Jawa Barat (Riskesdas) 2018 [Internet]. 2019 [cited 2025 Jun 14]. Available from: https://repository.badankebijakan.kemkes.go.id/id/eprint/3857/1/LAPORAN%20RISKESDAS%20JAWA%20BARAT%202018.pdf

[6] Aryani N, Syapitri H. Hubungan Kebiasaan Merokok Anggota Keluarga di dalam Rumah dengan ISPA pada Balita Di Puskesmas Helvetia Tahun 2016. Jurnal Kesehatan Masyarakat dan Lingkungan Hidup [Internet]. 2018;3. Available from: http://e-journal.sari-mutiara.ac.id/index.php/Kesehatan_Masyarakat

[7] Wahyuningsih S, Raodhah S, Syahrul Basri. Infeksi Saluran Pernafasan Akut (ISPA) pada Balita di Wilayah Pesisir Desa Kore Kecamatan Sanggar Kabupaten Bima. HIGIENE: Jurnal Kesehatan Lingkungan. 2017. doi:10.24252/higiene.v3i2.3701;

[8] Warjiman, Anggraini S, Sintha KA. Faktor-Faktor yang Mempengaruhi Kejadian ISPA pada Balita di Puskesmas Alalak Selatan Banjarmasin. Jurnal Keperawatan Suaka Insan. 2017. doi: 10.51143/jksi.v2i1.58;

[9] Tajussubky M, Rijal KS, Wiriansya EP. Hubungan Kebiasaan Merokok dengan Penyakit ISPA pada Pasien di Puskesmas Mandai Kabupaten Maros. Wal'afiat Hospital Journal : Jurnal Nakes Rumah Sakit. 2024. doi: 10.33096/whj.v5i1.133;

[10] Riyanto R, Kusumawati A. Pengaruh Asap Rokok terhadap Frekuensi Terjadinya Penyakit ISPA pada Balita di Puskesmas Kedung Banteng Banyumas. MEDISAINS: Jurnal Ilmiah Ilmu-ilmu Kesehatan. 2016;14(3):15–23. doi:10.30595/medisains.v14i3.1614;

[11] Novia K, Linggi EB, Inggamer AT, Palleo Y. Hubungan Perilaku Merokok Keluarga dengan Kejadian ISPA pada Balita di Wilayah Kerja Puskesmas Sowek Kabupaten Supiori Papua. Health Journal "Love That Renewed" [Internet]. 2024 [cited 2025 Jun 14];12(1). Available from: https://jurnal.ustb.ac.id/index.php/jks/article/view/190/183

[12] Seda SS, Trihandini B, Permana LI, Tinggi S, Kesehatan I, Banjarmasin SI. Hubungan Perilaku Merokok Orang Terdekat dengan Kejadian ISPA pada Balita yang Berobat di Puskesmas Cempaka Banjarmasin. Jurnal Keperawatan Suaka Insan (JKSI). 2021;6(2). doi: 10.51143/jksi.v6i2.293;

[13] Cahyani FR, Sutrisno, Septiani BN. Pengaruh Paparan Asap Rokok terhadap Kejadian ISPA (ISPA) pada Balita di Wilayah Puskesmas Toroh. The Shine Cahaya Dunia D-III Keperawatan Universitas An Nuur [Internet]. 2025;10(01). Available from: http://ejournal.annurpurwodadi.ac.id/index.php/TSCD3Kep

[14] P2PTM Kemenkes RI. Apa saja faktor yang mendorong seseorang merokok? [Internet]. 2021 [cited 2025 May 6]. Available from: https://p2ptm.kemkes.go.id/infographic-p2ptm/konsumsi-

tembakau-faktor-risiko-penyakit-tidak-menular/apa-saja-faktor-yang-mendorong-seseorang-untuk-merokok

[15] WHO. Global Adult Tobacco Survey (GATS) Indonesia Report 2021 [Internet]; [cited 2025 Jun 14]. Available from: https://drupal.gtssacademy.org/wp-content/uploads/2024/11/GATS_Indonesia_2021_CountryReport.pdf

[16] Lutpiatina L, Sulistyorini L, Notobroto HB, Raya RP, Utama RD, Thuraidah A. Multilevel Analysis of Lifestyle and Household Environment for Toddlers With Symptoms of Acute Respiratory Infection (ARI) in Indonesia in 2007, 2012, and 2017. Glob Pediatr Health. 2022 Mar 1;9. doi: 10.1177/2333794X221078700;

[17] Astuti WT, Siswanto S. Kebiasaan Merokok Anggota Keluarga dengan Kejadian Infeksi Saluran Pernafasan Akut (ISPA) pada Balita Usia 1-5 Tahun. Jurnal Keperawatan Karya Bhakti. 2022 Jul;8(2):57–63. doi: 10.56186/jkkb.104;

[18] Kurniawan M, Wahyudi TW, Zainaro MA. Hubungan Paparan Asap Rokok dengan Kejadian ISPA pada Balita di Wilayah Kerja Puskesmas Bandar Agung Kecamatan Terusan Nunyai Kabupaten Lampung Tengah. MANUJU: Malahayati Nursing Journal. 2021;3(1). doi: 10.33024/manuju.v3i1.3050;

[19] Rahmawati IN, Diahsari A, Arifah S. Hubungan paparan asap rokok dengan kejadian ISPA pada balita di Puskesmas Pundong Bantul Yogyakarta. In: Prosiding Seminar Nasional Penelitian dan Pengabdian Kepada Masyarakat [Internet]. LPPM Universitas 'Aisyiyah Yogyakarta; 2024 [cited 2025 Jun 14]. Available from: https://proceeding.unisayogya.ac.id/index.php/prosemnaslppm/article/download/351/231/1684

[20] Vinod A, Kaimal RS. Study on acute respiratory infection in children aged 1 year to 5 years-A hospital-based cross-sectional study. J Family Med Prim Care. 2023 Apr;12(4):666–71. doi:10.4103/jfmpc.jfmpc_1748_22.

[21] Dharel S, Shrestha B, Basel P. Factors associated with childhood pneumonia and care seeking practices in Nepal: further analysis of 2019 Nepal Multiple Indicator Cluster Survey. BMC Public Health. 2023 Dec;23(1). doi:10.1186/s12889-022-14839-6;

[22] Verma M, Sangeeta K, Verma BK, Dubey DK, Mondal M, Mazumder MN, et al. The association between anti-smoking legislation and prevalence of acute respiratory illnesses in Indian children. Public Health in Practice. 2024 Jun;7. doi: 10.1016/j.puhip.2024.100481;

[23] Yamada M, Nakazawa M. Status of home-based secondhand smoke exposure among children and its association with health risks in Japan. Prev Med Rep. 2024 Feb;38. doi:10.1016/j.pmedr.2023.102585;

[24] Titania DA, Garna H, Zulmansyah. Gambaran Perilaku Merokok Keluarga pada Balita dengan ISPA di Puskesmas Ciasem. Bandung Conference Series: Medical Science. 2024;4:689–95. doi:10.29313/bcsms.v4i1.11544;

[25] Rahmadhani M. Hubungan Kebiasaan Merokok pada Anggota Keluarga dengan Kejadian ISPA pada Balita di Klinik Pratama Sehati Husada Kecamatan Sibiru-Biru. Prima Medical Journal: Artikel Penelitian. 2021;4(1). doi: 10.34012/pmj.v4i1.1624;

[26] Juniantari NPA, Negara GNK, Satriani LA. Hubungan Perilaku Merokok Orang Tua dengan Kejadian ISPA pada Balita Umur 1-4 Tahun. HEARTY Jurnal Kesehatan Masyarakat [Internet]. 2023;11(2):207–14. doi:10.32832/hearty.v11i2.15046;

[27] Lasabu H, Irnawan SM, Elfiyunai NN. Hubungan Kebiasaan Merokok Anggota Keluarga Dengan Kejadian Infeksi Saluran Pernapasan Atas (ISPA) Pada Balita. JIKES : Jurnal Ilmu Kesehatan [Internet]. 2023 [cited 2025 Jun 13];1(2):313–22. Available from: https://yptb.org/index.php/jik/article/view/591/478

[28] Damayanti SC, Rusminarni S, Antoro B. Hubungan Perilaku Merokok Orang Tua Terhadap Kejadian Ispa Pada Balita Di Unit Pelaksana Teknik Puskesmas Rawat Inap Banjar Agung

Kabupaten Lampung Selatan. Nusantara Journal of Multidisciplinary Science [Internet]. 2023;1(2). Available from: https://jurnal.intekom.id/index.php/njms
[29] Kusparlina EP, Wasito E. Kebiasaan Merokok Anggota Keluarga dan Lamanya Pengobatan ISPA pada Balita. Jurnal Penelitian Kesehatan Suara Forikes. 2023. doi: 10.33846/sf14214;
[30] Fihirudin, Hanafi F, Inayati N, Hasbi M. Penggunaan Nicotine Replecment Therapy (NRT) dan therapy community sebagai upaya menghentikan kebiasaan merokok. SELAPARANG: Jurnal Pengabdian Masyarakat Berkemajuan. 2024;8(1):0513–22. doi: 10.31764/jpmb.v8i1.19414;
[31] Xia W, Li WHC, Cai W, Song P, Ho LLK, Cheung AT, et al. Association of smoking behavior among Chinese expectant fathers and smoking abstinence after their partner becomes pregnant: a cross-sectional study. BMC Pregnancy Childbirth. 2020;20(1). doi:10.1186/s12884-020-03148-8;
[32] Sitorus R, Widjanarko B, Kusumawati A. Faktor yang Berhubungan dengan Praktik Ibu dalam Melindungi Keluarga dari Paparan Asap Rokok. JKM Jurnal Kesehatan Masyarakat [Internet]. 2019;7(4):2356–3346. doi:10.14710/jkm.v7i4.24378;
[33] Marta R, Rasyid R, Asrawati. Perilaku Merokok Orang Tua di Dalam Rumah dan Kejadian Infeksi Saluran Pernafasan Akut pada Balita. Jurnal Penelitian Kesehatan Suara Forikes [Internet]. 2023;14. doi: 10.33846/sf14nk206;
[34] Xia W, Li HCW, Song P, Ho KY, Luo Y, Liang T, et al. Perceptions, behaviours and attitudes towards smoking held by the male partners of Chinese pregnant women: a qualitative study. BMC Public Health. 2021 Dec 1;21(1). doi: 10.1186/s12889-021-11966-4;
[35] Paraje G, Valdés N. Changes in parental smoking behavior and children's health status in Chile. Prev Med (Baltim). 2021 Dec 1;153. doi: 10.1016/j.ypmed.2021.106792;
[36] Wahyuni NMH, Mirayanti NKA, Sari NAME. Hubungan Perilaku Merokok Orang Tua dengan Kejadian Infeksi Saluran Pernapasan Akut pada Balita di UPTD Puskesmas Tabanan III. Bali Medika Jurnal. 2020;7(1):11–23. doi: 10.36376/bmj.v7i1;
[37] Ji Y, Zhang Y, Yun Q, Chang C. Gender differences in social environmental changes associated with smoking: a cross-sectional study from Chinese internal migrants. BMJ Open. 2022 Nov 22;12(11). doi: 10.1136/bmjopen-2021-058097.