The Relationship Between Personal Hygiene Behaviour and The Incidence of Acute Respiratory Infection (ARI) at Class IIA Correctional Institution Kendal

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Abstract
Background: The incidence of Acute Respiratory Infection (ARI) at the Class IIA Correctional Institution in Kendal is notably high. ARI consistently ranks as the most frequent illness each month. Previous studies have indicated that one of the contributing factors to ARI is poor personal hygiene behaviour. **Objective:** This study aims to analyse the relationship between personal hygiene behaviour and the incidence of ARI at the Class IIA Correctional Institution in Kendal. **Methods:** This quantitative study employed a cross-sectional research design with a sample of 294 inmates from the Class IIA Correctional Institution in Kendal. The sample was selected using a total sampling technique, which included all inmates at the facility. The study used the chi-square test for analysis. **Results:** The personal hygiene variable showed a significant relationship with the incidence of ARI at the Class IIA Correctional Institution in Kendal. P-value in the Pearson Chi-Square test was 0.000. personal hygiene indicators such as knowledge, attitude, support from healthcare workers, peer support, community leader support, and access to information and media, all play a role in influencing ARI incidence at the Class IIA Correctional Institution in Kendal. Therefore, there is a need for measured health promotion efforts to improve inmates' personal hygiene behaviour.

Keywords: personal hygiene, incidence, acute respiratory infection, correctional institution

1. Introduction

As is well known, viral epidemics or pandemics of acute respiratory infections (ARI) pose a global threat (1). People in prisons are an especially vulnerable population to ARI (2). Inmate health is a crucial aspect of the correctional system. Unsanitary conditions and poor sanitation in prisons can have serious health consequences, particularly regarding the spread of infectious diseases like ARI (3). Studies have shown that enforcing strict protocols to prevent the spread of ARI in prisons is extremely challenging (4).

Personal hygiene represents a healthy living paradigm that promotes physical, mental, spiritual, and social health (2). It is a key behavior that needs to be instilled among inmates. According to the World Health Organization (WHO), around 2.2 million people in developing countries die each year from diseases linked to unsafe drinking water, poor sanitation, and inadequate personal hygiene (3). ARI is a common illness among inmates in correctional facilities. Overcrowded and inadequate prison conditions lead to a high number of ARI cases (5).

Overcrowding in prisons is a significant issue faced by the Directorate General of Corrections (Ditjenpas). The number of inmates in prisons is currently almost double their intended capacity, which has a profound impact on inmates' health (6). There is a well-documented link between hygiene levels, sanitation conditions, and the health status of inmates. Those who live in more hygienic environments with better sanitation enjoy better health outcomes (3). Promoting personal hygiene is vital in creating a clean environment, minimizing disease transmission, and supporting overall health within the correctional community (7).

There are two types of health programs in Class IIA Kendal Correctional Institution. The first is promotive and preventive, focusing on improving sanitation and fostering personal hygiene behaviors.

The second is curative, through optimizing healthcare services at the facility's clinic (8). ARI is the most prevalent illness in Class IIA Kendal Correctional institution, with 294 male inmates. Of these, 120 inmates contracted ARI in the last month, while 174 did not. The criterion for ARI diagnosis is if inmates reported ARI symptoms within the last month, followed by a doctor's anamnesis and confirmation through medical records. It was found that 40.82% of inmates at Class IIA Kendal Correctional institution suffered from ARI (9).

Previous research highlights the importance of healthcare facilities and medical staff, emphasizing the need for cooperation with various stakeholders. More importantly, inmates must be made aware of the importance of maintaining their health and adopting healthy living habits (10).

The Age Range of Inmates	Number of Inmates
<20	**7**
20-29	**109**
30-39	**90**
40-49	**52**
50-59	**16**
60-69	**14**
70-79	**6**

Table 1. Inmate Age Data

Based on the data above, it is evident that the inmate population at Class IIA Kendal Correctional institution is predominantly comprised of individuals aged 20-29, accounting for 37.07% of the total. This is followed by those aged 30-39 at 30.61%, and inmates aged 40-49 at 17.69%. The age group of 50-59 makes up 5.44%, while those aged 60-69 represent 4.76%. The smallest percentages are found in the under 20 age group at 2.38% and the 70-79 age group at 2.04%. From this age distribution, it can be concluded that the majority of inmates fall within the productive age group, particularly in the 20-29 and 30-39 age brackets.

Ditjenpas, in its report, also confirmed that the role of young people in their productive years is increasingly at risk, with many falling into criminal behavior. This is evident from data on adult inmates aged 18 to 30 recorded at Class IIB Balikpapan Detention Center (11).

Additionally, the data reveals that 65.31% of the inmates at Class IIA Kendal Correctional institution are from Kendal, followed by 11.90% from Semarang, 2.72% from Pekalongan, 2.04% from Batang, 2.04% from Tegal, 1.70% from Magelang, and smaller percentages from other cities or regencies. This indicates a significant dominance of inmates from Kendal, comprising 65.31% of the total population. The trend in the inmates' place of origin shows that the majority come from the local area of the correctional institution. While inmates can come from various cities or regencies, there is a notable concentration of inmates from their home region (12).

Length of Detention in the Correctional institution	Number of Inmates
< 1 Tahun	88
1 Tahun - 2 Tahun	91
> 2 Tahun - 3 Tahun	37
> 3 Tahun - 4 Tahun	31

> 4 Tahun - 5 Tahun	17
> 5 Tahun	30

Table 2. Data on Length of Incarceration in the Correctional institution

Based on the available data, it can be observed that the majority of inmates at the correctional institution have served sentences of less than 2 years. This data was collected during the research period. A total of 29.93% of inmates have been incarcerated for less than 1 year, while 30.95% have served between 1 and 2 years. This indicates that nearly 61% of inmates have relatively short sentences, i.e., less than 2 years. Therefore, all inmates at Class IIA Kendal Correctional institution meet the criteria for inclusion in the study, as they have been imprisoned for at least one week.

2. Method

The study titled "The Relationship Between Personal Hygiene and the Incidence of Acute Respiratory Infections (ARI) in Class IIA Kendal Correctional institution" employs a descriptive quantitative approach with a cross-sectional design. Cross-sectional design is a research method used to study the dynamics of the correlation between risk factors and outcomes by approaching, observing, or collecting data simultaneously at a single point in time (point time approach). This means that each research subject is only observed once, and measurements are made on the subject's characteristics or variables at the time of the examination (13).

The aim of this research is to identify whether there is a relationship between inmates' sanitation perceptions and the incidence of ARI within the prison environment. Using a cross-sectional design, data was collected simultaneously during the research period from July to August 2024.

The research sample consisted of 294 inmates from Class IIA Kendal Correctional institution, using the total sampling method, in which all inmates who met the criteria were included in the study. The findings showed that 120 inmates had experienced ARI within the last month. The determination of ARI status was carried out through several steps: inmates had to report ARI symptoms they experienced in the past month, followed by a doctor's anamnesis, and a review of medical records for further verification.

This study aims to determine whether personal hygiene behaviors within the prison environment are associated with the risk of ARI. With 120 inmates affected by ARI and the remaining 174 unaffected, the research seeks to provide new insights into the importance of improving sanitation conditions in correctional facilities to reduce the incidence of illnesses, particularly ARI.

The study uses the Chi-Square correlation test to analyze the relationship between inmates' sanitation perceptions and the incidence of ARI in Class IIA Kendal Correctional institution. The Chi-Square test is a statistical technique commonly used to test a hypothesis in a population where the data is nominal and the sample size is large. If the Chi-Square result is below 0.05, the data is considered statistically significant (14). The Chi-Square test was chosen because the data obtained is categorical, comparing inmates who contracted ARI with those who did not, along with their personal hygiene behavior. This test helps determine whether there is a proportional difference between inmates with good personal hygiene and those with poor personal hygiene in relation to ARI incidence.

The analysis process involved comparing the frequency of ARI occurrences among inmates with good personal hygiene versus those with poor personal hygiene. The Chi-Square test results provide insights into whether sanitation perceptions are significantly associated with ARI incidence, as indicated by the p-value. If the p-value is less than 0.05, the relationship is considered statistically significant.

Based on the analysis, this study is expected to provide recommendations on the importance of improving sanitation facilities and health education for inmates in correctional facilities. The findings can also serve as a foundation for policymakers to promote better personal hygiene practices in prisons, minimizing the risk of infectious diseases, particularly ARI, in the prison environment.

3. Results and Discussion

From the data above, it is evident that the largest proportion of inmates have spent between 1 to 2 years in detention, accounting for 30.95%. This is followed by those incarcerated for less than 1 year at 29.93%, more than 2 years but less than 3 years at 12.59%, more than 3 years but less than 4 years at 10.54%, more than 5 years at 10.20%, and more than 4 years but less than 5 years at 5.78%. From this data, it is clear that inmates serving between 1 to 2 years represent the largest percentage, at 30.95%.

Comorbidity	Number of Inmates
Complex Allergies	1
Acid Reflux	2
Gout	7
Asthma	4
Low Blood Pressure	1
Diabetes Mellitus	5
Itching	11
Hypertension	11
ARI (Flu, Cough, Fever)	30
Heart Disease	2
Cholesterol	1
Chills	1
Obesity	1
Dizziness	1
Inflammation and Diarrhea	1
Toothache	4
Heart Attack	1
Stroke	1
Hearing Difficulty	1
None	206
Typhoid	1
Vertigo	1

Table 3. Comorbidity Data of Inmates

Based on the data above, the largest percentage is found in the "No Comorbidity" category, which accounts for 70.07%, indicating that the majority of inmates do not have any comorbid conditions. This is followed by ARI (Flu, Cough, Fever) at 10.20%. The most common comorbidity at Class IIA Kendal Correctional institution is ARI. This finding is consistent with research conducted at Class IIA Sungguminasa Narcotics Prison, where ARI was also identified as the most prevalent illness (15).

Vaccination History	Number of Inmates
Not Yet	37
Vaccination 1	28
Vaccination 2	77
Vaccination 3	147

Vaccination 4	4

Table 4. Data on COVID-19 Vaccination History

The largest percentage is for those who have received the third vaccine, accounting for 50%, indicating that the majority of inmates have been vaccinated up to the third dose. This is followed by the second vaccine at 26.19%, those who have not been vaccinated at 12.59%, the first vaccine at 9.52%, and the fourth vaccine at 1.36%. Based on the data above, it can be concluded that the majority of inmates at Class IIA Kendal Correctional institution have been vaccinated. This suggests that the implementation of the COVID-19 vaccination program at Class IIA Kendal Correctional institution is quite optimal, although some individuals remain unvaccinated. This demonstrates the institution's commitment to ensuring its occupants receive vaccinations to prevent the spread of infectious diseases. The situation at Class IIA Kendal is consistent with the implementation of the COVID-19 vaccination program at Class IA Bandar Lampung Correctional institution, which has also achieved optimal vaccination coverage. It is hoped that the inmate community can develop herd immunity, which will help reduce the transmission of COVID-19 and the incidence of ARI within the facility (16).

The research results from Class IIA Kendal Correctional institution indicate that the personal hygiene behaviours of the majority of inmates fall into the good category, with 284 respondents (96.6%). Furthermore, the level of knowledge is dominated by the good category with 277 respondents (94.22%). The attitude level is also dominated by the good category, with 277 respondents (94.22%). The level of support from health staff is predominantly good, with 271 respondents (92.18%). Support from peers is primarily good, with 262 respondents (89.11%). Support from community leaders is also predominantly good, with 245 respondents (83.33%). Lastly, access to information and media is mainly in the good category with 160 respondents (54.42%). Overall, all variables concerning personal hygiene behaviour are categorized as good.

Based on the study, the number of inmates diagnosed with ARI is 120. The data show that 92.5% of these inmates exhibit good personal hygiene behaviour, while 7.5% fall into the poor category. Additionally, the number of inmates without ARI is 174, with 99.4% demonstrating good personal hygiene, while 0.6% are categorized as poor.

The personal hygiene behaviour variable shows a significant relationship with the incidence of ARI in Class IIA Kendal Correctional institution. The p-value from the Pearson Chi-Square test is 0.000. According to the output table, the Asymp. Sig. (2-sided) value for the Pearson Chi-Square test is 0.000. Since the Asymp. Sig. (2-sided) value of 0.000 is less than 0.05, it can be concluded that the hypothesis is accepted. Thus, it can be interpreted that there is a relationship between personal hygiene behaviour and the incidence of ARI at Class IIA Kendal Correctional institution. The higher the level of personal hygiene among inmates, the lower the incidence of ARI.

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	113.566[a]	63	.000
Likelihood Ratio	89.046	63	.017
Linear-by-Linear Association	21.768	1	.000
N of Valid Cases	294		

a. 70 cells (79.5%) have expected count less than 5. The minimum expected count is .01.

Table 5. Results of the Pearson Chi-Square Test for Personal Hygiene Behavior and ARI Incidence

The results of this study at Class IIA Kendal Correctional institution align with research conducted at Class I Correctional institution in Bandar Lampung, Lampung Province, which indicated a relationship between personal hygiene behavior and the incidence of ARI (17). The connection between personal hygiene behavior and ARI incidence is also reflected in a study conducted at Class IIB Sleman (18). Research at Class I Malang Correctional institution showed a relationship between personal hygiene behavior and the quality of life regarding ARI (19).

Another study found a significant relationship between personal hygiene and ARI complaints at a sand mining site (20). In a different research location, it was noted that poor personal hygiene could lead to diseases among school-aged adolescents, such as diarrhea, ARI, Dengue Fever (DBD), intestinal worms, hand-foot-mouth disease, measles, chickenpox, mumps, eye infections, and ear infections (21).

The findings of this study are consistent with previous research that has shown a correlation between personal hygiene behavior and the incidence of ARI. The consistency of these results strengthens the empirical evidence regarding the significant relationship between the two variables. Therefore, it can be concluded that good personal hygiene practices are an important factor in the prevention of acute respiratory infections.

4. Conclusion

This study found that 99.4% of inmates at Class IIA Kendal Correctional institution exhibited good personal hygiene behavior, while only 0.6% of them demonstrated poor hygiene practices. The results of the correlation test indicate a significant relationship between personal hygiene behavior and the incidence of ARI in this facility. This means that the better the personal hygiene behavior of inmates, the lower their incidence of ARI.

The implications of this research are highly relevant for the management of Class IIA Kendal Correctional institution. With the certification of their "Healthy Kitchen" by the Kendal District Health Office and the Halal Product Guarantee Agency (BPJPH) of the Ministry of Religious Affairs of the Republic of Indonesia, this facility is able to provide healthy and quality food for inmates. Recommendations from this study emphasize the importance of cultivating personal hygiene within the correctional environment, as well as the need for improved sanitation facilities.

Figure 1. Certification Information for the Healthy Kitchen at Class IIA Kendal Correctional institution

Figure 2. Healthy Kitchen at Class IIA Kendal Correctional institution

Additionally, systematic and measurable health promotion efforts are needed to enhance the personal hygiene behavior of inmates within the facility. This program should include intensive education on the importance of personal cleanliness, such as proper handwashing, wearing masks, and maintaining cleanliness in living areas. Furthermore, the provision of adequate hygiene facilities, such as access to clean water, soap, and proper sanitation, must also be strengthened. This approach should be supported by healthcare personnel who regularly monitor the health of inmates, as well as the implementation of regulations that require basic hygiene practices as part of their daily routines. By doing so, it is hoped that the risk of transmitting infectious diseases can be significantly reduced, thus creating a healthier environment within the correctional institution.

Of course, this study has limitations in its design, as it does not cover direct effects. Therefore, future research is recommended to utilize more complex designs to gain deeper insights into this phenomenon and its impact on inmates. It is hoped that future studies can provide a more comprehensive understanding of health issues in correctional settings.

5. Conflict of Interest

There is no conflict of interest related to the writing or publication of this article.

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