

Prevalence of Diseases among Rohingya Refugees in Bangladesh: A Comprehensive Study

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Abstract:

Background: Bangladesh has experienced an influx of refugees several times from 1992 to 2017. It is estimated that about 700,000 Rohingya refugees have fled over to Bangladesh following violence in Myanmar's Rakhine State on 25 August 2017. A greater number of diseases like unexplained fever, acute respiratory infection, acute watery and bloody diarrhea, cough and COPD related complications predominantly occurred as a result of that huge scale of Rohingya influx.

Objective: To date, very few studies have evaluated FDMN (Forcibly Displaced Myanmar Nationals) disease prevalence that predominantly experienced in Rohingya camp settings at Cox-Bazaar. The aim of this prospective controlled study was to establish the frequency of diseases that predominantly affected the Rohingya community based on age and gender.

Methodology: This study has been performed under cross-sectional study, Where we observed weekly emergency URMN morbidity and mortality reports by PHD (Partners in Health and Development) for 6 months (1st April to 30th September, 2018). So, while conducting the study, we collected daily as well as weekly reports and their follow-up records of huge number patients. We evaluated 80564 cases of Rohingya communities for summarizing the disease prevalence.

Results: Acute respiratory infection associated cough & cold with no pneumonia was found in 35841 cases (44.49%), Fever Unexplained > 101°F (38.5° C) in 12739 cases (15.81%), Diarrhea Others in 12003 cases (14.90%), Skin Diseases in 11562 cases (14.35%), acute watery Diarrhea in 4424 cases (5.49%) and other combined diseases account for 3995 cases (4.96%).

Conclusion: It is certainly concluded that, various infectious diseases along with waterborne and vector-borne diseases were mostly affected children below 5 years and female above 5 years FDMN (Forcibly Displaced Myanmar Nationals) due to unhygienic living environment, polluted air and lack of basic needs.

Keywords: Rohingya, Forcibly Displaced Myanmar Nationals (FDMN), Disease prevalence, Infectious disease, Bangladesh.

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I. Introduction

Bangladesh has experienced an influx of refugees several times from 1991 to 2017 [1]. In Between 1991-1992 a mass departure of more than 250,000 Rohingya refugees fled oppression in Myanmar and arrived in Bangladesh, living in refugee camps and solely rely on outside support from the United Nations (UN), the Government of Bangladesh (GOB) and Nongovernmental Organizations (NGOs) [2]. Approximately 671,500 Rohingya refugees have fled over to Bangladesh following violence in Myanmar's Rakhine State on 25 August 2017 [3]. Moreover, Refugees in official camps have been living in since 1992 creating it one of the most complicated situations as Myanmar government has been excluded them from citizenship and basic human rights also marked as illegal immigrants from Bangladesh [4]. Bangladesh has been the host of refugees from an ethnic, linguistic and religious minority group of Northern Rakhine State (NRS) of Myanmar despite being overpopulated and limited in resources [5]. Bangladesh have been repatriated and accepted about 30000 Rohingya refugees are living in two registered camps monitored by the government and the UN Refugee Agency (UNHCR). Although, a large number of Rohingya people, approximately 200000, is living in different

unauthorized camps and local areas without any valid registration, any valid legal status or international assistance [4].

So from 25th august 2017, about 671,500 Rohingya refugees have entered into Bangladesh from Myanmar, joining approximately 212,000 others who had fled in earlier influx. Accordingly till 15th march 2018, over 584,000 Rohingya refugees arrivals are in Kutupalong expansion site, 187,000 in other camps, and 113,000 arrivals in host communities, creating a huge impact on congested health response. The large scale of the influx into the Cox's bazaar district of Bangladesh and the deficiency of resources yield a critical humanitarian emergency that overcomes the coping capacity of the local communities and systems. This overpopulated living conditions in refugee camps, particularly the Kutupalong expansion sites, expose the FDMNs to further risk of public health.[6]. Rohingya camps overall health and hygienic situation is very poor that are responsible for increased various infectious diseases. The socio economic condition and psychological behavior of Rohingya refugees deliver vulnerable health situation, especially for the young girls, women and aged persons in the camp setting [5].

Among Rohingya refugees existing public health risks exacerbated due to congested living conditions, inadequate drinking water quality and poor nutritional status. Diseases of concern that are vector and water borne, including malaria, dengue and chikungunya, AWD, Shigella, Typhoid, and Hepatitis A and E. Moreover, concerns exist regarding the presence of vaccine preventable diseases such as measles and diphtheria. Early Warning Alert and Response System (EWARS) which is an online, integrated data collection, analytics, alerting, and automated reporting system are helping to monitor the numerous conditions [6]. Ministry for Food and Disaster management of Bangladesh and UNCHR working together to support and combat poverty in the Rohingya refugees area, and measures to encourage more national NGOs to work in these areas [6]

II. Methods

Study Place

The study was conducted at *Kutupalong, Balukhali, Tasnimarkhola and Bagghona* Rohingya camp settings in Cox's Bazar in Bangladesh.

Data collection, Management and Analysis

This study has been performed under cross-sectional study. So, while conducting the study, we have collected daily as well as weekly reports and their follow-up records of huge number patients. "Membrane Filtration Technique" used for determining the presence of harmful entities within the sample water for finding water and vector borne diseases. Weekly emergency URMN morbidity and mortality reports by PHD (Partners in Health and Development) for 6 months (April to September, 2018) were collected using convenient sampling; as a result finally we have got 80564 cases. After collecting the data analysis is done with Graph pad Prism (Version 7) and Microsoft excel.

2.1 Outbreak Diseases

Surveillance

From 1st April, 2018 to 30th September, 2018 the weekly emergency URMN morbidity and mortality reports of different camps of UNICEF-PHD-HP (NGO) at Kutupalong, Balukhali, Tasnimarkhola, Bagghona etc. helps to lined the disease prevalence among Rohingya refugees. Where we have observed 80564 cases that are categorized into prevalence according to age and gender. The diseases that have been reported through the time period (April to September) are mostly Cough & Cold with no Pneumonia, Acute Watery Diarrhea, Fever Unexplained > 101°F, Diarrhea Other, Skin Diseases, Acute Respiratory Infections etc. [3, 6, 7]

Demographics

[Table 1] summarizes the male and female Rohingya refugees below and above 5 years of age in terms of diseases they have been experienced through URMN morbidity and mortality reports of 50 different camps of UNICEF-PHD-HP (NGO) at Kutupalong and Ukhiya since 1st April, 2018 to 30th September 2018 [7].

Table 1. Demographic summary in number

Male			Female		
Less than 5	More than 5	Total	Less than 5	More than 5	Total
25388	12928	38316	23330	18918	42248

2.2 Prevalence of Water Borne Diseases

Water quality monitoring has shown significant levels of contamination that have been reported through percentage of cases that we have observed. Almost 50% cases that are reported due to water borne contamination. The source of water is contaminated and used for households which are posing a great concern

of public health risk at refugee camps. “Membrane Filtration Technique” used for determining the presence of harmful entities within the sample water. [8]. One of the most available contaminants in water –the fecal coliform bacteria and then E.coli bacteria [9]. Recent water testing in the settlements showed that 92% of the water was contaminated with *Escherichia coli* and that 48% was highly contaminated (>100 CFU/100 ml) (World Health Organization). The high presence of these bacteria in drinking water leading to various waterborne diseases such as cholera, diarrhea, dysentery, typhoid fever, hepatitis and gastroenteritis. Water sources of refugee camps are heavily contaminated and survival Rohingya community using that contaminated water for their daily households even for drinking, which has a high probability of deterioration of their present conditions [10].

III. Cough & Cold-No Pneumonia

In refugee camp settings air is polluted with a good number of contaminants, as a result case related to polluted air is comparatively higher in number. Acute Respiratory Infection is a very common problem among refugees related to air borne contaminants. “Although no indication of severe condition or clustering of cases were reported during the data collection of study period. There has been a minor observation to analyze the increase trend of the diseases and all are being investigated”[11]. According to Dr. Toma, head of a medical center run by the NGO Gonoshasthaya Kendra in the Balukhali refugee camp, most of the patients have been admitted with cold borne diseases like cough, pneumonia, fever. “The majority of the patients are children. We are offering them free medicine. But we are also getting a significant number of elderly patients with acute respiratory problems due to the cold and highly congested living conditions” [12].

3.1 Acute Watery Diarrhea & Diarrhea Other

Prevalence of diarrheal diseases was reported significantly high among all indicated cases during the period of study at refugee camp settings. Based on the URMN (UN Registered Myanmar Nationals) morbidity and mortality reports by PHD (Partners in Health and Development) have been shown people are exhausted and children below 5 years are at a heightened risk of acute watery diarrhea and cholera outbreaks. The female of the camp settings is also the major group of victims after children with acute watery diarrhea. To mitigate the risk of Acute Watery Diarrhea (AWD) and Cholera, UNICEF has launched a response plan to prevent outbreak. There are high levels of severe malnutrition among children, which exacerbates the risks regarding an outbreak of acute watery diarrhea. Their response focuses on- Improving wash in settlements, participation on cholera prevention initiatives, Reaching communities with life-saving awareness raising and prevention messages.[13]

3.2 Fever Unexplained >101°F

A few sites of camp setting have been reported a higher number of cases unexplained fever during 2nd and 3rd week of the month of may 2018, even though overall reporting was marked on a steady level. Unexplained fever predominantly placed due to some distributed influenza A/B virus. Lack of diagnostics tools and laboratory capacity are main restrictive factors of diagnosis at the field level of camp settings. However, no deaths have been reported within the host community.[14]

3.3 Skin Diseases

Forcibly Displaced Myanmar Nationals (FDMN) community took shelter in overcrowded registered and unregistered camps. Health service providers said that half-starvation of malnourished ethnic minority people of Myanmar coupled with unhygienic living conditions in and around camps and under open sky were causing their increasing skin and various infectious diseases.[15].The health concerns among Rohingya refugees remain fairly consistent. The main health issues continue to be related to poor living conditions, leading various skin diseases.[16]. Age below 5 years children, both male and female were affected concomitantly similar percentile.[17]. So it is clear to notice that female and children are significantly prone to skin diseases rather than male in the Rohingya camp settings at kutupalong and Balukhali. Directorate General of Health Services (DGHS) control room said that The number of patients of skin diseases was 407 on September 27, 2017; 576 on September 30, 2017; and 1,321 on December 3, 2017.[18]. Over time situation of Rohingya camp settings get overcrowded, unhygienic, air and water polluted, etc. as a result the number of patients of skin diseases increased significantly according to URMN reports. [17].

3.4 Other Diseases

Complications that were frequently observed through observation highlighted the significant percentage of cases that have already discussed. On the other hand, some less significant cases like Diphtheria, COPD, Measles, Bloody Diarrhea, Mumps, Acute Jaundice Syndrome, Suspected malaria, etc. also observed through URMN morbidity and mortality weekly reports of FDMN by PHD (Partners in Health and Development) at Balukhali and Kutupalong camp settings.[19]. Cluster of the less observed cases marked 3995

at actual and 4.96% among all cases.[17]. A diphtheria outbreak happened on 6th November, 2017. The outbreak reported as peaked up in December 2017 and after that a steady decline has been reported in March, 2018.[20]. As of 28th April 2018, 6,822 cases of diphtheria with 42 deaths reported after that WHO, UNICEF and health sector partners worked concomitantly with the Bangladesh Ministry of Health and Family Welfare to vaccinate more than 475,000 children in Rohingya refugee all camp settings.[21]. The risk of further spread in the host population has been assessed to be moderate as the routine vaccination coverage. For 864 cases, acute jaundice syndrome (AJS) has been reported to EWARS (Early Warning Alert and Response System) ranging from 90 to 100 per week. Among the acute jaundice syndrome cases, 34% (292/864) were less than five years old. Detailed surveillance through case-based reporting which alongside enhanced laboratory testing improved epidemiological understanding and monitoring.[22]. Measles cases were reported between weeks 1 and 7, 2018. Suspected measles/rubella cases have steadily declined in 2018. These trends are based on syndrome reporting (no laboratory confirmation). Eighty percent of cases were aged under 5 years.[23].

IV. Result

Total n= 80564 cases were reported among FDMN communities, among them female patients were n= 42248 (52.44%) and male patients were n= 38564 (47.86%). Female patients less than 5 years (age <5yr) were reported for 23,330 (55.22%) cases and more than 5 years (age > 5yr) reported in 18918 (44.77%) cases. Male patients less than 5 Years (age < 5yr) were reported for 25388 (66.25%) cases where more than 5 years (age >

Table-2

Disease Prevalence		
Disease	Overall	Percentage
Cough & Cold no Pneumonia	35841	44.49
Acute Watery Diarrhea	4424	5.49
Diarrhea Other	12003	14.90
Fever Unexplained > 101°F	12739	15.81
Skin Diseases	11562	14.35
Others	3995	4.96
Total	80564	100 %

5yr) were only for 12928 (33.73%) cases. So it has been found that female patients were predominant according to disease prevalence than male as well as for both groups of patients, children age below 5 years were most likely to vulnerable group.

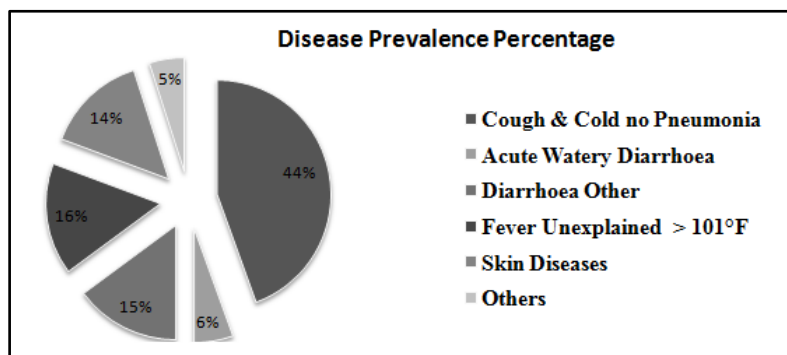


Figure 1: Pie chart presentation shows that the disease prevalence percentages of different diseases, where the highest and lowest disease category classified as that affected Rohingya refugees

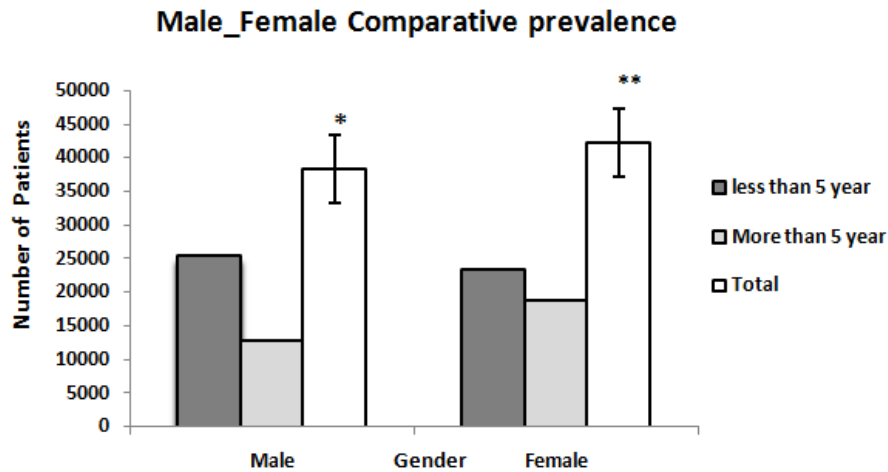


Figure 2: Representing the comparative situation based on age (below & above 5 years) and gender among all observed cases reported through URMN morbidity and mortality reports from 1st April 2018 to 30th September 2018 by PHD. Where **= indicates total female patient significantly more than *= male total patients.

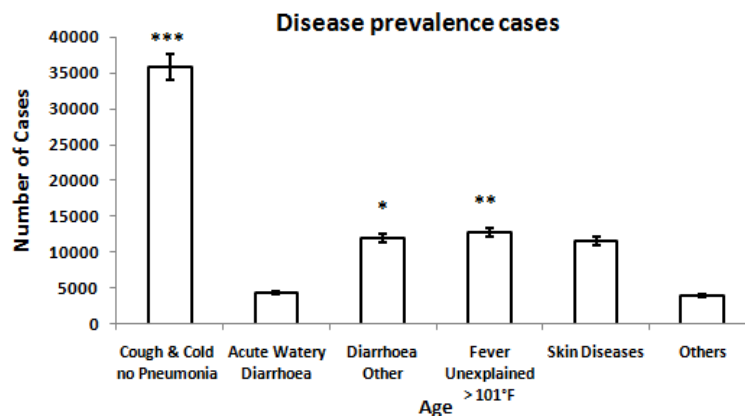


Figure 3: Graphical presentation exhibits the number of patients reported by communicable diseases through URMN morbidity and mortality reports by PHD. *** Represents the most significant cough and cold with no pneumonia, ** represents the 2nd most significant cause fever unexplained >101⁰ F, * represents diarrheal causes as 3rd significant category.

Among 80564 cases of URMN morbidity and mortality report, a total of n= 35841 cases have been reported for cough and common cold with no pneumonia, which is almost 45% of all cases. Depending on the comparative study among the victims of cough & cold- no pneumonia, it has been found that age below 5 years of both male & female and female over 5 years has been reported most vulnerable group.

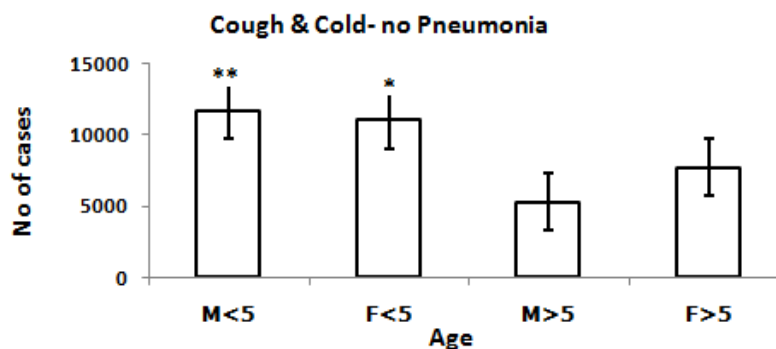


Figure 4: According to age and gender of "Cough & Cold - no Pneumonia" cases, where ** represents M<5 most significant age group and * represents the 2nd most vulnerable group F<5.

In case of Diarrheal disease like acute watery diarrhea (AWD) and diarrhea for other reason are concomitantly figured 20% among all cases, where acute watery diarrhea (AWD) was reported for n= 4424 (5.49%) cases and diarrhea others for n= 12003 (14.90%) cases. Both AWD and Diarrhea other were predominantly reported in male patients than female. Age below 5 years of male children also most affected by diarrheal disease than female children.

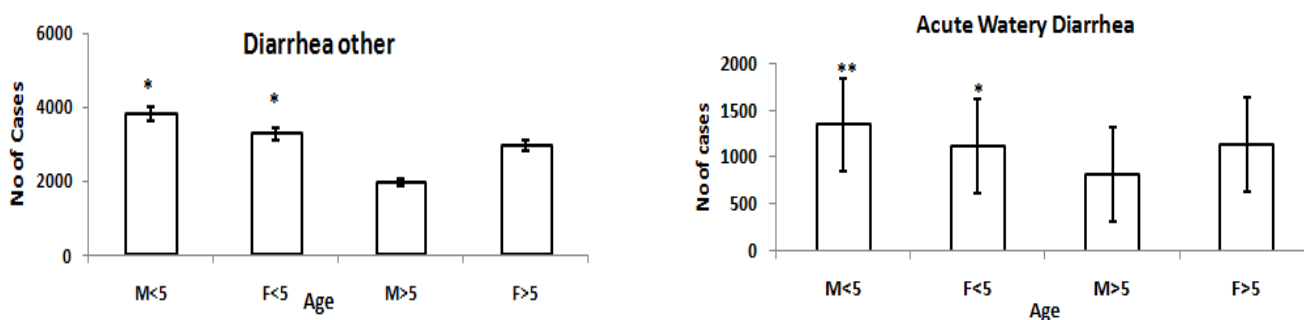


Figure 5: According to age and gender "Acute Watery Diarrhea (AWD) and Diarrhea other" cases reported, where (**M<5) marked as highest prevalent for diarrhea then (*F<5).

Exactly n= 12739 fever unexplained cases-patients reported through URMN morbidity mortality reports. This has marked significant cases among all cases and lined with 16% almost. Like other cases, children below 5 years of age are most affected and then female over 5 years predominantly with unexplained fever.

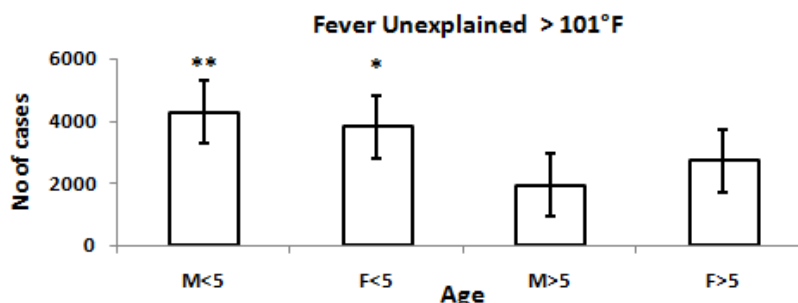


Figure-6: Fever Unexplained >101°F cases reported for different age group of patients where number of observed cases were significant for (**M<5) then (*F<5) age group.

Comparatively observed cases for skin diseases less than other cases and reported n= 11562 cases with 14.35% among total cases. A different picture has been found here with significant vulnerable group female aged over 5 years mostly affected with skin diseases.

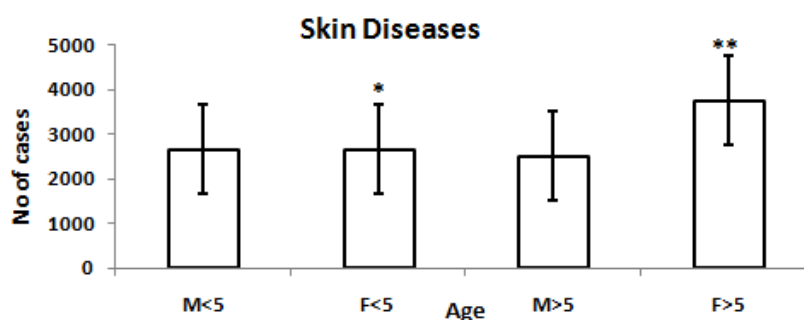


Figure 7- According to age and gender "Skin Diseases" cases reported for different age group of patients where number of observed cases were **F>5 m

V. Discussion

The result of this study showed that water and airborne diseases placed reportedly predominant among all diseases. The finding of this study also showed that age and gender both were crucial parameter to determine the disease complications severity among displaced Rohingya refugees. Almost in every case it has been reported that age below 5 years children and female below and above 5 years, both were the most vulnerable group of the communicable diseases. For this reason, between 16 September and 4 October, 2017 the Ministry of Health and Family Welfare with support of WHO, UNICEF and other local partners arranged a measles and rubella (MR) vaccination campaign for children (age 6 to 14) and the result was satisfactory as no death of children in camp setting further reported for the outbreaks. Lack of budget, lack of sufficient quality doctor, lack of medicine supply, lack of giving proper medicine in time and lack of basic things that are needed for maintaining minimum quality of life was the sum up the reasons behind disease propagation.

VI. Conclusion

From 1962 Rohingya refugees have been deprived of their human rights in several times as a result, they have become a stateless nation without a legal nationality. They are forcibly displaced to Bangladesh in august 2017 by Myanmar government. The present worse situation of the Rohingya people in Bangladesh once again reminds the medical community of the importance of health emergency disaster risk management (H-EDRM) in camp settings.[24]. Enduring violence and context instability have left these helpless communities in a terrible situation which leading them into an emergency and crisis settings, water and sanitation, food and nutrition, shelter and non-food items, access to health services, and information are the five crucial domains securing the health and survival of the affected Rohingya community very badly.[25]. With the support of UNICEF, WHO, NGOs, the Ministry of Health and Family Welfare of Bangladesh along with DGHS trying to reinforce the basic needs of the affected community to lead a better condition. Global collaboration is urgently needed to facilitate negotiations between Myanmar and Bangladesh in order to improve the fate and well being of the Forcibly Displaced Myanmar Nationals (FDMN). This may ensure the survival of the Rohingya community along with minimum dignity and respect. So, Based on the significance of the nationality crisis of the Rohingya and current problems associated with these following measures can be taken: Supplies of adequate Medicine and Healthcare services, Increase the supportive Pharmacist, Doctor and Nurse, Advanced and satisfactory treatment, Increase Child Care Hospital, Decrease pollution, Mass awareness of life threatening disease.

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