

INDEPENDENT UNIVERSITY OF BANGLADESH (IUB)

THESIS MANUSCRIPT

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Project Title

Disease prevalence and Health care seeking behavior among construction workers of Dhaka metro-rail project; A cross sectional study.

Introduction

Bangladesh is a rapidly developing country. Lots of infrastructures are set up every year. The number of workers is more than 3.5 million, with about 78% of them working in unestablished sectors [1]. These are people who play a significant role in building our countries, and their life is at stake. They get low wages, no work safety, very low or no compensation or health care and so on, with the employers rarely being convicted. There is also neglect on behalf of the state, without even having a national database with all workers in the construction sector [2].

Most construction workers in Bangladesh are employed as casual day-labor. Consequently, they work without any contract with employers and are mostly paid on a daily basis [3]. Most of them are employed through middle man or contractors. Day-labor construction workers do not get any letters of employment.

Construction is a general term meaning the art and science to form objects, systems, or organizations. Construction is an industry that includes the erection, maintenance, and repair of buildings and other immobile structures and the building of roads and service facilities that become integral parts of structures and are essential to their use [4]. Bangladesh Construction Market is segmented by Sector (Residential, Commercial, Industrial, Infrastructure, Transportation, Energy, and Utilities).

Bangladesh's government has undertaken huge road and highway development projects throughout the country. Because transportation is the most important aspect of any area's development, the government is gradually attempting to mitigate this need [5]. As a result, real estate companies also concentrate on bringing new projects to various Bangladeshi cities.

Even several large-scale construction projects have been happening in Bangladesh [6]. Such as-- *Dhaka Metro Rail Line-6, Padma multipurpose bridge, Hazrat Shahjalal International Airport Terminal 3, Dhaka Elevated Expressway, Rooppur Nuclear power plant project, Matarbari coal-fired power plant, Rampal power plant, LNG terminal setup, Sonadia deep seaport, Chittagong Elevated Expressway, BRT Line 3, Chittagong-Cox's Bazar Railway line, Karnaphuli Tunnel (First underwater tunnel in South Asian region), & already proposed many more are upcoming...*

As we know, Dhaka Metro Rail, informally known as the Dhaka Metro, is an approved mass rapid transit system under construction in Dhaka, the capital city of Bangladesh [7]. Through the world's first metro rail system opened in 1890 in London, In Bangladesh it is a totally new concept. The urgency to mitigate the mass transportation problems in Dhaka prompted the Bangladesh government to seek expansion and modernization created the Dhaka transport coordination authority. After proper examining under the road transport and highways division of ministry of road transport and bridge, the Dhaka mass rapid transit development project was taken up by the government [8]. In June 2013 Dhaka mass transit company limited (DMTCL) was established by the government to implement the metro rail lines across the city.

Construction workers render a significant contribution to the growth of an economy, especially with respect to the development of a city. But socio-economic background of construction workers in Bangladesh has become worse in the absence of any formal institutions, protection laws, development plans, training centers and other types of considerable supports [9]. As a result, the construction sector is totally in control of the traditional middlemen (sordar / mohajon) in most of the cases. In our society, people in the upper level always dominate the labor class. No effective national policy in favor of them is found and a limited implementation of Bangladesh National Building Code (BNBC), drafted in 1993, does not support them in this regard. The Labor Act-2006 seems to be crude and far away from the expectation of the construction workers. Real Estate & Housing Association of Bangladesh (REHAB) hardly plays any role or develops any plan and policy for the betterment of the workers. On the basis of present socioeconomic scenario of construction workers most of the construction workers are working without any formal training, and are being employed by third party. They have become the victim of frequent casualty and some other severe difficulties [10]. There are different types of research on construction workers in Bangladesh. Most of them are discussed about-- Different types of Accidents, their causes, risk factors, hazards at construction sites, influential factors, intervention for preventing injuries, occupational health & safety issues, life style of construction workers, work stress & impact of work environment, an aging workforce, participation of female workers in construction sector, work related musculoskeletal disorders and health consciousness among construction workers in Bangladesh.

Bangladesh is one of the most populous countries in the world, as well as having one of the fastest growing economies in the world. Consequently, Bangladesh faces challenges and opportunities in regards to public health [11]. The Human Rights Measurement Initiative finds that Bangladesh is fulfilling 89.3% of what it should be fulfilling for the right to health based on its level of income. When looking at the right to health with respect to children, Bangladesh achieves 95.0% of what is expected based on its current income. In regards to the right to health amongst the adult population, the country achieves only 94.2% of what is expected based on the nation's level of income. Bangladesh falls into the "bad" category when evaluating the right to reproductive health because the nation is fulfilling only 78.8% of what the nation is expected to achieve based on the resources (income) it has available.

Due to a large population, Bangladesh faces a large burden of disease:

- Non-communicable diseases: Diabetes, Cardiovascular disease, Hypertension, Stroke, Chronic respiratory disease, Cancer, etc.
- Communicable diseases: Tuberculosis, HIV, Tetanus, Malaria, Measles, Rubella, Leprosy, Malnutrition, Environmental sanitation problems, etc.

Nowadays it is not very useful to differentiate between common people and construction workers as disease burden. Because more or less everyone is suffering from chronic diseases.

Like many low-income countries around the world, Bangladesh is in the midst of an epidemiologic transition where the burden of disease is shifting from a disease profile dominated by infectious diseases, under-nutrition and conditions of childbirth to one increasingly characterized by non-communicable chronic diseases (NCDs). In the World Health Organization's (WHO) South-East Asia Region, NCDs – which include heart disease, stroke, cancer, chronic respiratory diseases and diabetes –

are estimated to account for half of annual mortality (54%) and burden of disease (47%). In Bangladesh, one of the poorest countries in the region, the limited available evidence suggests that NCDs are responsible for half of annual mortality (51%), and almost half of the burden of disease (41%).

The construction industry is one of the most vital and important industry in the world but the construction sector is unfortunately notorious for being one of the most hazardous industries along with transportation, mining and agricultural sectors [12]. The work in construction sector is most hazardous and vulnerable because of poor employment conditions characterized by its casual nature, temporary relationship between employer and employee, uncertain working hours, lack of basic amenities and inadequacy of welfare facilities [13]. The basic requirements for welfare facilities are often neglected by contractors. These unique characteristics of the construction industry make it difficult to implement labor welfare measures compared to other industries [14]. The construction industry is risky industry; where the workers most of the time has to move from site to site, working in harsh circumstances and living in unhygienic conditions thereby; suffering from serious occupational health problems and are vulnerable to diseases.

Construction companies often track the number of injuries and fatalities, and sometimes near-misses, to quantify and assess project safety performance. The majority of current research studies and new construction projects place an emphasis on onsite safety controls (e.g., hazard prediction and incident prevention). Meanwhile, the long-term health impacts due to construction workers' unsafe behaviors and the surrounding working environments are rarely mentioned [15]. Many construction workers suffer from physical pains and other types of illnesses after retirement due to thoughtless and careless behaviors while working.

Habits and behavior about using health facilities, which is called health-seeking behavior, are different among different cultures and influenced by different factors. Health of the individuals has always been a matter of national concern, and the government is in charge of it continuously and constantly. The way health systems are planned, directed, and financed influences people's lives and their source of income. Health system resources such as equipment and materials used in providing health services are limited and then the determinants of health-care utilization should be investigated to organize them properly. Individual's health-seeking behavior is one of the determinants that affect the utilization of health services. To move toward higher quality health system, more and better information is required on existing health-seeking behavior defined as the different decisions that individuals make toward diseases and illnesses. In other words, health-seeking behavior is the usual habit of people in relation to their health. This behavior consists of inattentive to illness, treatment action that means people visit health providers, and self-medication [16]. Studies have demonstrated that individual's behavior to engage with particular health services is influenced by a variety of socioeconomic variables, age, sex, the type of illnesses, access to services, and perceived quality of the services. Literature indicate that all patients with further health-care needs perception, such as those with chronic states and multiple health problems, use health system more than patients with minor illness, and this utilization raises with the number of chronic states the patient has.

But, in Bangladesh maximum construction workers are illiterate & they are not even concern about their health. In this situation the discussion about the health protection & care seeking behavior of the construction workers has always been neglected. Even there are no research in Bangladesh has looked into the chronic disease status and care seeking behavior of construction workers.

Research Objectives:

- To identify the prevalence of infectious (diarrhea, cholera, typhoid, dengue, etc.) and non-infectious disease (diabetes, hypertension, heart disease, cancer, etc.) among the construction workers of Dhaka Metro Rail project.
- To find out the health care seeking behavior among the construction workers.

Research methods:

The details of the research are as given below:

- ❖ **Study design:** Cross sectional study.
- ❖ **Source of data:** Primary data through face to face interviews.
- ❖ **Study Site:** This study was carried out from Uttara Diyabari, where the DMR line 6 construction activities are going on.
- ❖ **Study population:** Construction workers of DMR. Age 18-55 years, properly appointed according to government workers law, worker working in the metro rail construction sites and residing in the area of 'Farm gate and Diyabari labor colony'.

- ❖ **Study period:** October 2022 to May 2023.
- ❖ **Sample size:** 59.

Ethical Clearance

- ❖ Consent was taken from the respondents.
- ❖ None other than the investigators of this study and representatives of the National Institutes of Health have access to the records.
- ❖ Respondent's right to refuse and withdraw from the study at time was accepted.
- ❖ Confidentiality of the respondent was maintained.

Data collections methods

Face to face interview

For the non-Bangla speaking construction workers, the questionnaire will be translated to Hindi with the assistance of a Hindi speaking senior manager at the construction site. The same person will also interview the non-Bangla speaking participants in Hindi in front of the PI and give the answer to the PI in Bangla.

For the participants who have a poor education or are illiterate, the interviewer will slowly and clearly explain each question before recording the answer.

Sampling technique:

Non-random convenient sampling.

Data management:

Microsoft Excel was used to compile the data, then the data was transferred to the SPSS, which was then analyzed with the SPSS 25 version for various descriptive statistics and univariate analysis. P-values lower than 0.05 were regarded as statistically significant.

Data analysis:

Following variables will be analyzed—

- ✓ Socio - Demographic condition
- ✓ Life style & availability of HR facilities
- ✓ Prevalence of diseases
- ✓ Overall health care seeking behavior
- ✓ General knowledge about health
- ✓ Overall hygiene practices
- ✓ Smoking or drug abusing

Socio-Cultural-Economic and Demographic Table

Variable	Percentage	Number
Age:		
18-30	10%	20
31-40	13%	32
41>	6%	7
Nationality:		
Bangladeshi	40%	23
Indian	60%	36
Education:		
1-5	27.1%	16
6-10	42.4%	25
11-12	27.1%	16
13-16	3.4%	2
Salary:		
12000-20000	40%	23
21000-30000	60%	36
Worker Category:		
Unskilled	42.4%	25
Semi-skilled	33.9%	20
Skilled	23.7%	14

Disease & Health Care Seeking Behavior

Chronic Diseases		
• Diabetics Mellitus	16.9%	10
• Hypertension	13.6%	8
• Arthritis	22%	13
• Visual Problem	10.2%	6
• Others	15.3%	9
• Not at all	28.8%	17
Infectious Diseases		
• Diarrhea	22%	13
• Dengue	16.9%	10
• Dysentery	6.8%	4
• Cholera	0%	0
• Typhoid	13%	8
• Hepatitis A	6.8%	4
• Hepatitis E	1.7%	1
• Others	22%	13
• Not at all	13.6%	8
Injuries in the last 6 months while working		
• Burn	1.7%	1

<ul style="list-style-type: none"> • Scald • Cutting Injuries • Fracture • Others • Not at all 	<p>1.7%</p> <p>32.2%</p> <p>10.2%</p> <p>11.9%</p> <p>42.4%</p>	<p>1</p> <p>19</p> <p>6</p> <p>7</p> <p>25</p>
Smoking history <ul style="list-style-type: none"> • Regularly • Occasionally • Never 	<p>45.8%</p> <p>23.7%</p> <p>30.5%</p>	<p>27</p> <p>14</p> <p>18</p>
History of alcohol taking <ul style="list-style-type: none"> • Regularly • Occasionally • Never 	<p>34.4%</p> <p>25.4%</p> <p>71.2%</p>	<p>2</p> <p>15</p> <p>42</p>
Routine health check – up <ul style="list-style-type: none"> • Every three months • Every Six months • None 	<p>37.3%</p> <p>61%</p> <p>1.7%</p>	<p>22</p> <p>36</p> <p>1</p>
History of drinking water facility at working site <ul style="list-style-type: none"> • Yes • No 	<p>35.5%</p> <p>69.5%</p>	<p>18</p> <p>41</p>
History of taking medical help, if they get sick in their home <ul style="list-style-type: none"> • Consult a doctor in a private medical facility • Consult a doctor in a govt medical facility • Consult a pharmacy operator • Consult a homeopathy practitioner • Consult a Ayurveda doctor • Consult a kabiraz • Consult a village doctor 	<p>3.4%</p> <p>32.2%</p> <p>16.9%</p> <p>13.6%</p> <p>10.2%</p> <p>6.8%</p> <p>16.9%</p>	<p>2</p> <p>19</p> <p>10</p> <p>8</p> <p>6</p> <p>4</p> <p>10</p>
History of taking medical help, after joining DMR <ul style="list-style-type: none"> • Consulted to Medical Officer of DMR • Consulted a private doctor outside • Consulted a 	<p>68.6%</p> <p>13.7%</p>	<p>35</p> <p>7</p>

<ul style="list-style-type: none"> government doctor • Took medicine from a pharmacy operator • Did self-medication 	7.8%	4
	7.8%	4
	2%	1
History of taking consultation regarding illness in last 03 months		
<ul style="list-style-type: none"> • Yes • No 	84.7%	50
	15.3%	9
History of taking antibiotics in the last 6 months		
<ul style="list-style-type: none"> • Yes • No 	44.1%	26
	55.9%	33
History of taking any pain killers in the last 6 months		
<ul style="list-style-type: none"> • Yes • No 	71.2%	42
	28.8%	17
History of taking any medicines for gas in the last 6 months		
<ul style="list-style-type: none"> • Yes • No 	93.2%	6.8%
	55	4

Results:

We focused on two main themes, namely, disease prevalence, relevant healthcare-seeking behavior of the construction workers of Dhaka Metro Rail Project. Findings reveal that 22% of the construction workers suffered from Diarrhea, 16.9% from dengue fever, 13% from typhoid, 6.8% from dysentery & hepatitis A in the last 3 months. In case of chronic diseases result shows 22% construction workers suffered from Arthritis, 16.9% from DM, 13.6% from HTN & 10.2% from visual difficulties.

On the other hand, normally when they get sick at their home 32.2% consult with a doctor in a Govt. medical facility, 16.9% normally consult with pharmacy operator or goes to a village doctor, 13.6% believes in homeopathy practitioners & very few of them believes in Ayurveda or kabiraj. After coming to Dhaka Metro Rail Project 68.6% of them consulted to medical officer of DMR project for their illness. 13.7% consulted a private clinics doctor as their organization bears the treatment cost by a health policy, 7.8% consulted to Govt. hospital & also 7.8% still consulted to pharmacy operator. Very few of them waited for self-recovery & they were visited to doctor only when treatment from drug shops failed to cure them or they suffered serious illnesses or traumatic injury.

Discussion:

As because this is the largest mega project of Bangladesh, the construction workers of Dhaka Metro Rail Project are one of the most marginalized population groups in the urban area with a substantial need for healthcare services in addition to the necessities of daily living. Towards this end, we explored the illness experiences of this population and relevant healthcare-seeking behavior, including experiences of interaction with the formal health systems. Findings reveal their common practice of visiting retail drug shops when ill for advice and treatment, their reluctance to visit formal facilities until compelled by serious illness or injury, and also lack of effective mechanism in the formal health systems to reach them with needed services.

There have been a few quantitative studies done earlier on the construction workers in Bangladesh; however, this is the first one to apply a qualitative approach to investigate in depth the issues delineated earlier. Our purposive selection of respondents from different spots with a high concentration of the construction workers, and age and sex groups, allowed us to capture the diversity of their disease & health needs and priorities, which is expected to help the policymakers to design a customized health intervention for them. Data were triangulated using different method with the construction workers and KIIs with the service providers and policymakers to ensure its reliability and validity. Since it covered a limited number of spots for recruiting study participants due to constraints in time and resources, results may not be generalizable for all construction workers of Dhaka City or other metropolitan areas.

Since the study is done on a non-random sample from Dhaka Metro Rail Project's Diyabari site only, questions remain whether this picture is true for such people in different cities, towns & different construction sites. For example, illness profile and healthcare-seeking behavior, which are known to differ from place to place. This may begin with a scoping review of the different small-scale intervention undertaken in different areas and context and feed a national representative survey. Thus, for a representative data on this and other margin alised groups in the urban context, a countrywide quantitative survey backed up by qualitative data (in subsamples, to explore the context) is needed urgently to translate the rhetoric 'leave no one behind' into practical action. This will help in accommodating the diversities in needs and priorities of these people from various urban areas of the country while designing interventions for them and fine tuning these interventions as feasible.

The destitute conditions of the construction workers found in this study are pretty much similar to what has been observed earlier in Bangladesh and also in India. The illness profile and relevant healthcare-seeking behavior of the construction workers observed in this study have not so much changed over the years. Rather it mirrored that of the other underprivileged groups of people in Bangladesh, for example, sustaining injury and trauma from harassment by the law-enforcing agencies and political hoodlums especially by the construction workers. Health was found to be of lesser priority to these people compared with other necessities like food, drinking, smoking, alcohol abusing. Visiting retail drug shops as the first stop for seeking healthcare services is quite common among the underprivileged people in Bangladesh and India. Not even changed over time despite enormous expansion of health facilities in the country over the years. It works as a 'quick fix' for not-so-severe illnesses in the absence of a formal system of healthcare services for them and saves opportunity cost for monthly earning. This is in contrast to what was found in a study where the homeless people faced difficulties like waiting in a long

queue with prescription to receive medicines from a community pharmacy. Formal facilities were visited by these people mostly when drug shop treatment failed to cure the illness or the illness became worse or the illness was serious, including injuries, as also observed elsewhere. However, compared to other construction sites, the Dhaka Metrorail project has a much lower rate of occupational injuries and illnesses. Since it is possible to provide safety protection and medical facilities to some extent through the project, the workers here are relatively better off. Although health awareness is not that good, workers are willing to seek medical care to some extent due to various health protection related trainings and medical assistance from project medical teams.

Conclusions:

Although in Dhaka Metro Rail Project construction workers are not in extremely vulnerable position, But, there are still some barriers like the cost of medicines and diagnostic tests, vehicle cost for getting medical help, long waiting time and opportunity cost also.

However, compared to other construction sites, the Dhaka Metrorail project has a much lower rate of occupational injuries and others illness. Since it is possible to provide safety protection and medical facilities to some extent through the project, the workers here are relatively better off. Although health awareness is not that good, workers are willing to seek medical care to some extent due to various health protection related trainings and medical assistance from project medical teams.

Recommendations:

Based on study findings, some recommendations to improve the current situation are made: (1) mobile clinics to provide essential services at their doorsteps, (2) prioritized access to services in the formal health facilities, (3) services provided at a time and place of their convenience, and (4) medicines and diagnostics provided free of cost. To supplement and complement the government services, some of the small-scale interventions implemented by the NGOs and others may be critically reviewed, and the successful ones may be considered for scale-up.

Reference

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Consent Form:

This survey is being conducted as part of a course work in Independent University, Bangladesh. The purpose of this study is to explore the knowledge of disease prevalence and health care seeking behavior among construction workers of Dhaka Metro-rail Project.

This type of survey can give extremely valuable information regarding disease prevalence & care seeking behavior of the construction workers which can be used to prevent the disease burden & make sure a healthy sound life among under unprivileged workers. It is important that you take a little time to carefully think and answer all the questions. The research output from this survey is intended to planning of preventing disease burden & improve the health care seeking behavior among the construction work related peoples. All information of the participants will be completely confidential and used solely for the purpose of this research.

We urge everyone taking this survey to carefully answer the questions so that the results can be dependable. If you agree to take the survey, please fill out the following questionnaire.

Questionnaires

Socio-Demographic Information

Name:

Age:

Education: in number of class years

- 1-5
- 6-10
- 11-12
- 13-16

Nationality:

- Bangladeshi
- Indian

What is your salary structure? (In a range)

- 12k - 15k
- 16k - 18k
- 19k - 22k
- 23k - 25k
- 30k - 35k
- 36k - 40k
- 41k - 45k

Work Status information

What is your worker category status?

- Un-skilled
- Semi-skilled
- Skilled

Risk Behaviors

Do you smoke?

- Regularly
- Occasionally
- Never

Do you drink alcohol?

- Regularly
- Occasionally
- Never

Do you take drugs or other addictive substances?

- Yes
- No

HR Facilities

How often is routine health check- up done at your organization by a medical team?

- None
- Every month
- Every three months
- Every 6 months
- Once every year

Does your organization arrange training regarding occupational health injury?

- Yes
- No
- Sometimes

Living Conditions:

Do you have water filter facility in the place that you stay now?

- Yes
- No

Do you have sanitary toilet in the place that you live now?

- Yes
- No

Does your company provide hand soap for you in the toilet?

- Yes
- No

Work site facilities

For the kind of construction work that you do, do you need any kind of personal protective equipment (Safety shoes, jacket, helmet, sunglass, etc.) to ensure your safety?

- Yes
- No

If yes, were you given the PPE that you need?

- Yes
- No

Is there any drinking water facility available at your working site?

- Yes

- No

If no, then where from you drink water?

- I bring water
- I buy water
- I drink tap water

Is there any fresh room facilities on construction site?

- Yes
- No

Healthcare seeking behavior

If you ever get sick in your home, what will be your most preferred mode to get medical help?

- Consult a doctor in a private medical facility
- Consult a doctor in a government medical facility
- Consult a pharmacy operator
- Consult a homeopathy practitioner
- Consult a Ayurveda doctor
- Consult a kabiraj
- Consult a village doctor
- Consult a religious healer
- Others

Have you suffered any of the following injuries in the last 6 months while working at the construction site?

- Burn
- Scald
- Cutting Injuries
- Fracture
- Others

If yes, how sever was the injury?

- Did self-medication
- Needed First aid only
- Needed to be hospitalized for 1-7 days
- Needed to be hospitalized for 7-14 days
- Took leave and went home

Did your organization bear the complete cost of treatment?

- Yes
- No
- Partially

Did you consult a doctor outside your company for this treatment?

- Yes
- No
- Partially

Have you suffered from any of the following diseases within last 03 months?

- Diarrhea
- Dengue
- Dysentery

- Cholera
- Typhoid
- Hepatitis A
- Hepatitis E
- Others

If yes, what did you do to cure yourself?

- Medical officer of your company
- Consulted a private doctor outside my company
- Consulted a government doctor
- Took medicine from a pharmacy operator
- Consulted a Homeopathic /Unani/Ayurveda practitioners
- Consult religious healer
- Did Self-medication
- Did not do anything

Do you have any of following chronic disease?

- Diabetes Mellitus (DM)
- Hypertension (HTN)
- Cancer
- COPD/ Bronchial Asthma
- Arthritis
- Mental health problem
- Visual problem
- Hearing difficulty
- Others

If yes, who told you about this disease?

- Medical officer at my company
- A private doctor outside my company
- A government doctor
- A pharmacy operator
- A Homeopathic /Unani/Ayurveda practitioners
- A religious healer
- Self-diagnosis

If yes, are you taking any medication for the mentioned illness?

- Yes
- No

If yes, do you need to see any doctor for your illness at particular intervals?

- Yes
- No
- I don't know

If you need to see a doctor at particular intervals, have you seen a doctor regarding your illness in the last 3 months?

- Yes
- No

If you have seen a doctor in the last three months, who have you consulted?

- —Medical officer at my company
- A private doctor outside my company
- A government doctor
- A pharmacy operator
- A Homeopathic /Unani/Ayurveda practitioners
- A religious healer

Were you hospitalized in the last 6 months?

- Yes
- No

If yes, then where?

- In a BD govt. hospital in Dhaka
- In a BD private hospital in Dhaka
- In a govt. hospital at native home
- In a private hospital in native home

Do you need to take antibiotics in that last 6 months?

- Yes
- No

Did you need to take any pain killers in the last 6 months?

- Yes
- No

Did you need to take any medicines for gas in the last 6 months?

- Yes
- No

PHQ1-

In the past two weeks, have you had little interest or pleasure in doing things?

- Nearly every day
- Several days
- More than half the days
- Not at all

PHQ2-

In the past two weeks, have you been feeling down, depressed, or hopeless?

- Nearly every day
- Several days
- More than half the days
- Not at all

