

Potential health problems of delivery men working in extreme weather

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Abstract: Objectives: To understand the potential health problems of delivery men when they are working in extreme weather in Summer. Methods: A self-administered questionnaire survey was conducted among a sample of delivery men in Shanghai which is one of China's most populous cities in Summer 2023. Results: The delivery men aged 31.4 on average, with the majority married and low educated. The delivery men generally worked for over 6 days/week and nearly 11 hours/day. Although most of the delivery men have taken measure for sun protection or heatstroke prevention, some still have gotten fever, emesis or tinnitus. Conclusions: Delivery men in Shanghai is highly work-loaded and may encounter some potential health problems, especially in extreme weather in Summer.

Keywords: Extreme weather; Potential health problems; Delivery men

Introduction

Shanghai's urban development is changing rapidly. To make sure the Logistics goes well, so there are many delivery men. As of 21 May 2022, there were more than 18,000 takeaway riders on duty, with a daily delivery volume of around 1.8 million orders. The total number of distribution and delivery personnel was 118,000, of which 106,000 were delivered by e-commerce platforms, supermarkets and catering companies, and 12,000 by couriers. In the summer, these delivery men are working under the extreme weather, because the summer in Shanghai, the temperature is very high. However, most of them are the people who are not well educated. They may not have many protections under the sunshine. As known to all, long-term exposure to strong sunlight may burn and scorch the skin, resulting in dehydration, peeling and pain. UV rays and strong sunlight exposure can also cause damage to the eyes, resulting in tearing, redness, swelling, pain and, in severe cases, irreversible damage to retinal cells. All of this might have a potential impact on their physical and mental health. For this reason, I wanted to use this study to understand the characteristics of the work, the physical and psychological health of the deliveryman especially during the scorching summer, in order to better protect their health. My goal is to investigate the real effect from high temperature to the delivery men, and let them realize the damage, so that they can make some protections.

1. Background Information

1.1. Possible effect on people's health of exposing under the sun

1.1.1 Sunburn: long-term exposure to strong sunlight may burn and scorch the skin, resulting in dehydration, peeling, pain, etc. UV rays and intense sunlight exposure can also cause damage to the eyes, with symptoms of watery eyes, redness, swelling and pain, and in severe cases may damage retinal cells, causing irreversible effects;

1.1.2 Aging: light will cause natural aging of the skin, long-term exposure to strong sunlight will accelerate the aging of the skin, so that wrinkles, roughness, spots, sagging skin and other signs of aging gradually appear;

1.1.3 Allergy: strong sunlight contains a large number of ultraviolet rays, which are harmful to the skin. Allergy to ultraviolet rays may lead to skin allergy, and people with more sensitive skin are also prone to this condition, with symptoms such as erythema and pimples, which may be accompanied by itching and pain;

1.1.4 Skin cancer: long-term strong sunlight exposure may lead to solar keratosis, lesions may form scabs, and even induce squamous cell carcinoma such as melanoma and nonmelanoma skin cancer (NMSC).

(1) Melanoma. The mechanism of melanoma is unknown, but is believed to be linked to genetic factors. The principal identified

non-genetic risk factor is ultraviolet radiation (UVR) exposure, and the relationship between melanoma and UVR is 2-sided: non-burning sun exposure is associated with a reduced risk of melanoma, while sunburns are associated with a doubling of the risk of melanoma. It has long been observed that outdoor workers have a lower incidence of melanoma than indoor workers. A 1997 meta-analysis found an OR of 0.86 (95% CI: 0.77–0.96) for occupational sun exposure^[1].

(2) Nonmelanoma skin cancer (NMSC). There are no official registries for basal cell carcinoma (BCC) or squamous cell carcinoma (SCC), and estimates of the prevalence of these carcinomas vary widely. One group of investigators examined Medicare fee-for-service data, extrapolated to the entire United States population, and estimated that 2,152,500 persons were treated for 3,507,693 NMSCs in 2006^[2]. Several of the same investigators estimated that 3,315,554 persons were treated for 5,434,193 NMSCs in 2012 and revised the 2006 estimates to 2,463,567 persons and 4,013,890 NMSCs^[3]. These latter estimates indicated a 14% increase in Medicare NMSCs over the 6-year period 2006–2012 and a 54% increase in non-Medicare NMSCs over the 6-year period. It is not clear in this analysis that all treatments for NMSCs were in fact treatments for malignancies rather than for non-cancerous lesions, and these investigators found the ratio of BCC to SCC to be 1 to 1 instead of the expected 4 to 1. Another recent study which histologically confirmed all cases but studied only BCCs, calculated based on an analysis of a Kaiser Permanente BCC registry that approximately 2 million BCCs are treated annually in the United States in an undisclosed number of persons^[4]. Assuming a 4 to 1 ratio of BCC to SCC, this would indicate that 2.5 million NMSCs are treated annually. This study found that the incidence of BCC increased 17% during the 15-year period from 1998 to 2012^[1].

1.2. Protection

1.2.1 Physical protection: sun hats, umbrellas, sunglasses, ice sleeves, etc. on the market are good protection items, they can be good at the physical level to isolate the human body and UV contact, but also to isolate a certain amount of light and temperature on the skin, eye damage, belong to the more cost-effective and effective protection;

1.2.2 Chemical protection: chemical molecules in chemical sunscreens will be absorbed by the skin, the effect of absorbing ultraviolet rays inside the skin, and removed by human metabolism, is an effective way of protection. Different brands of chemical sunscreens, with different ingredients, may not be suitable for people with fragile and sensitive skin to choose chemical protection methods, and it is recommended to use them under the guidance of a doctor.

2. Benefits of sun exposure

Biological plausibility. Vitamin D is a hormone and most cells and organs in the human body have a vitamin D receptor, which explains the wide variety of diseases and disorders that have been linked to vitamin D insufficiency in epidemiological studies^[63]. The production of vitamin D by UV B radiation, the availability of vitamin D in food and supplements, and the biological plausibility of vitamin D as a mediator for a large variety of favorable health outcomes are well described in the literature

Methods

1. Survey subjects

After we have the permission, we sent out the forms to 20 randomly selected delivery men who came to my home.

2. The Form and Interview Content

By using self-designed health survey questionnaire, we are aiming to find out the following four things about delivery men: (1) age, gender, marital status and education; (2) smoking, drinking, physical exercise and other lifestyle habits; (3) rest time; (4) Different symptoms that delivery men may have to estimate the health problems of the delivery men.

3. The way of investigation

When the delivery men came to my apartment, I gave the form out and asked them to fill in.

4. Data analysis

Organizing and summarizing the survey and interview contents to estimate the current occupational work status of deliverymen, and assessing their physical and mental health status, also its relationship with age, gender, life and practice behavior.

Results

1. Sociodemographic characteristics

The deliverymen who participate in the investigation as shown in the graph. In the twenty deliverymen who participate in the investigation all of them are male. The average age is 31.4, the youngest one is 23, the oldest one is 58; 13 of them are get married, which account for 65%. All the other 7 people are not getting married. Most people have a lower level of education with junior and high school deploma.

Among 20 delivery men 12 of them smoke, account for 60%. Eight of them don't smoke at all, account for 40%.

Table 1. Sociodemographic characteristics, working conditions and heatstroke in deliveryman

Characteristics/Behaviors	Number or mean	Proportion (%) or Minimum-Maximum
Age (years)	31.4	23-58
Male	20	100.0
Marital Status		
Married	13	65.0
Single	7	35.0
Education		
Illiterate or Primary school	3	15%
Middle school	7	35%
High school	10	50%
College or above	0	
Smoking in the past month		
Yes	12	60.0
No	8	40.0
Drinking in the past month		
Almost everyday	2	10.0%
Often	1	5.0%
Sometimes	5	25.0%
Rare or no	12	60.0%
Years as a deliveryman		
<1	3	15.0%
1-3	7	35.0%
3-5	4	20.0%
≥5	6	30.0%
Working hours per day	10.9	4-15
Working days per week	6.3	5-7
Taking measures for heatstroke prevention		
Yes	19	95.0
No	1	5.0
Ever had heatstroke		
Yes	5	25.0
No	15	75.0

2. Working conditions

Among 20 delivery men, 7 of them work 10 hours a day. The person who work the most is 15 hours. The shortest is 4 hours. The average working time is almost 11 hours.

Among 20 delivery men, 11 of them work 6 days a week, account for 55%. 6 of them work 7days a week. The longest is 7 days. The shortest is 5 days a week. The average working days a week is 6.3.

3. Heatstroke and prevention

Most (95%) of the delivery men have taken some measures such as sun protection for heatstroke prevention. However, there are still some of them don't have any protection. However, there are still some delivery men who had experienced a sunstroke which account for 25%.

4. Heatstroke-related symptoms in the past months

Table 2 shows experiences of heatstroke-related symptoms in the past months among the study participants. Most of the delivery men

seldomly got fever, accounting for 90%. However, there were still 2 of them sometimes had fever.

All of the delivery men rarely felt head pain or dizzy. They also seldomly experienced nausea. However, two (10%) of them have sometimes had the emesis or tinnitus.

Among 20 delivery men, all of the delivery men seldomly experience polypnea, drop of blood pressure, or muscle spasm. They also seldomly had coma or convulsion.

Table 2. Occurrence of Heatstroke-related symptoms in the past months

Characteristics/Behaviors	Rarely No. (%)	Sometimes No. (%)	Often No. (%)	Always No. (%)
E1 Fever	18 (90.0)	2 (10.0)		
E2 Head pain	20 (100.0)			
E3 Dizziness	20 (100.0)			
E4 Nausea	20 (100.0)			
E5 Emesis	18 (90.0)	2 (10.0)		
E6 Tinnitus	18 (90.0)	2 (10.0)		
E7 Polypnea	20 (100.0)			
E8 Drop of blood pressure	20 (100.0)			
E9 Muscle spasm	20 (100.0)			
E10 Coma or convulsion				

Discussion and conclusion

Overall, the long exposure to sun will have a negative impact on delivery men's health. Most of them work more than ten hours a day, and work more than 5 days. Some of them have experienced sun stroke and emesis. To avoid these, the delivery men can do something to protect themselves from sunlight. The most common way of sun protection is wearing hoods, sleeves and leg coverings, they isolate the sun to achieve the effect of sun protection, the premise is that the product needs to have UV protection and better sweat absorption and permeability, this way is simple and direct and effective, and these things are easy to buy in the market. Another way is using sun cream. Sun cream contains sunscreens that block or absorb UV rays, thus preventing skin tanning and sunburn, and is therefore favored by many users. For delivery men, applying sunscreen is a good choice because it is easy to use and effective. Before riding, apply sun cream evenly on the parts that need sun protection. Unfortunately, the sunscreen effect can be maintained for a limited time, so it is recommended to carry it with you when you go out riding, and it should be noted that when buying sunscreen, you should choose sunscreen products that are suitable for outdoor sports. The most important thing is that to let the delivery men realize the harm which the sunlight will bring, and make the right protection. We can hold some lecture in the community to inform the delivery men.

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