

Mandatory Health Prevention and Promotion in Volunteer Fire Departments

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Abstract

A volunteer firefighter is defined as a person who protects their community, lives, and property without being compensated. Fighting fires is a strenuous physical task that entails a person to have strong cardio stamina and endurance. Recent qualitative research indicates that obesity, lack of exercise, and poor lifestyle habits are the main contributors to cardiac disease in the fire service. This ethnographical study looks at how volunteer firefighters perceive their own self-wellness and the challenges of maintaining healthy lifestyle changes. Participant observation and interviews will be conducted at two volunteer firehouses. The sample size will include eight firefighters; four females and four males. Participants must be over 21 years old and have been in the fire service for at least two years. Data will be collected utilizing in-person interviews with participants one on one, and observations during various mealtimes at the stations. The researcher, a research assistant, six coders, and two transcribers will analyze data continuously throughout the study. Informed consent forms will be available with those participating along with an information session about the study. The goal is to establish collaboration in educating firefighters about health promotion and health prevention with the utilization of nurses.

Keywords: Self-wellness; Lifestyle; Firefighters; Health; Nursing

Introduction

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As children, we see the big red fire trucks go by sirens blaring and lights flashing on their way to save the day. The firefighters all have on their heavy turnout gear and helmets while sliding on air packs. Little did we know most of the crew were volunteers that shared a passion for giving back to the community. I have been a volunteer firefighter for twenty-five years now at Goodwill Fire Company. Over the years we have become a family of brothers and sisters to each other. The firehouse has become a place of gathering, eating, training, celebrating, and sharing life stories. There comes a day that every fire department never wants to see, a line of duty death in the fire service.

When history books mention Benjamin Franklin, most of us initially think of a kite in a lightning storm. He started the first American fire department in Philadelphia dating back to 1736. The very first fire department was established around 350 years ago in Amsterdam and the first paid-on-call fire service was established in Boston in 1678 [1]. Firefighting has always required a lot of muscle and stamina whether at a fire scene or assisting the public. As the years of healthy diets have changed to instant, inexpensive meals so have the firefighter physiques. In the paid departments, especially those in the city, meals are prepared in the firehouse kitchen and are usually nutritious and fresh. In the volunteer fire department's kitchen, it may either be empty or have take-out meals.

A typical volunteer fire department is staffed by those members of the surrounding community. These members can range from ages 18 to over 50 years old and both men and women. When a person wants to join a volunteer fire company the process consists of filling out an application. There is not a physical requirement or a health exam before attending fire training at the local fire school. With the number of younger aged members decreasing all over the country in the volunteer service, at times it is left to the seasoned members to get the work done. This can take a physical and mental toll on an aging body and increase the risk of health problems. The Centers for Disease Control and Prevention website states a person's risk for heart disease increases as

they get older [2]. A firefighter's cardiac workload during a fire call can take on a tremendous amount of stress. When the adrenaline is flowing and the action is at lightning speed, it is easy not heed to dangerous warning signs.

A firefighter can carry up to an extra 60 pounds in full turn-out gear, air pack, and a tool on a fire call. Add the factors of obesity, smoking, poor diet and sedentary lifestyle and it is protentional a disaster. The National Fire Protection Association (NFPA) said sudden cardiac death was the leading cause of firefighter on-duty deaths in 2015. Volunteer firefighters who died had a much higher average age than did career firefighters, with 62 percent being older than 55. The largest career firefighter age bracket was 41 to 50, which accounted for 46 percent of the deaths [3]. This is an alarming number for the volunteer fire service, but what measures can be done to prevent it?

One major factor that can help decrease cardiac disease is health promotion and disease prevention. In the paid fire departments, the members are required to have yearly physical exams and participate in health promotion programs. This is not a guarantee that the firefighter will not have any cardiac issues, but it will help decrease the chances. Additionally, signs and symptoms of heart disease can be detected early. In paid departments it is mandatory but looking at volunteer departments it may be difficult to enforce health promotion. Ellis mentions in her article that the lives of volunteers are just as important and should not be neglected. There are fitness programs that can be incorporated into fire training such as carrying hose, ladders, or tools up and downstairs [4]. Before beginning these programs, all firefighters participating should be cleared to do so by the primary care provider.

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Some important factors need to be addressed:

- Diet
- Smoking
- Exercise
- Obesity

For most volunteers, the weekend or weekday evenings are the prime time to hang out at the firehouse. Mealtimes may consist of the local fast-food places are the mini markets with a barbecue on occasion. At times, some of the members may purchase their 'meal' through the firehouse vending machine if one is present. It is a time of bonding and sharing news from the previous week. There is usually a kitchen in the station, so this could be a great opportunity for one to cook a healthy meal for the members. In the case where there is not a kitchen, members can have a potluck meal by bringing healthy dishes. Food brings people together as stated in a recent study done by Kniffin, Wansink, Devine, and Sobal focusing on firehouse meals. It showed that firefighters having sit-down meals at a table together improved the teamwork mentality on the fire ground [5]. Providing healthy meals can initiate more beneficial healthy habits.

Looking back over the past 40 years or so, cigarette smoking was the 'in' thing to do and most everyone smoked. In the present day, most people are aware of the consequences of smoking and diseases. The Centers for Disease Control and Prevention mention on their website that smoking is the major cause of cardiovascular disease and is the cause of one out of every three deaths [6]. One of the depictions of firefighters in movies is the typical scene of everyone cleaning up the fire scene with the cigarette hanging off the lip. Smoking is very prevalent in the fire service mostly in the volunteer services. The important objective to promote health in the fire service is to provide smoking cessation programs or other options. With the effects of cardiac disease, lung cancer, and secondhand smoke on the rise, it is vital steps are taken to assist members in quitting smoking. The level of stamina required on a typical fire call is very intense. A firefighter's heart and lungs should be in the best condition they can be during cardiac activity.

With the busy hectic schedule, members have outside the firehouse between families and jobs, it's difficult to find time for exercise. The Mayo Clinic website lists some of the benefits of regular physical activity, those include weight control, combatting diseases, boosts energy, improves mood and sleep [7]. The members must speak to their health care provider before starting an exercise program. Flexibility and core strength are the two most neglected areas of firefighter fitness [8]. Pulling, pushing, reaching, and dragging are the actions a firefighter's body will mostly perform on the fire scene. Officers can incorporate physical fitness in their training nights, put together a gym room at the station or participate in community charity walks or runs. These steps alone can help decrease the chances of cardiac disease.

America is rated the most obese country in the world today which is alarming to healthcare providers. If we look at menus, especially competitive fast-food chains, everything is larger sized, doubled with the greasy ingredients. With a society today on the go and limited time to eat, the fast-food drive-thru is ideal. Proportions of food are much larger with the nutrition quality rating lower. Fire departments, especially those who are busy, usually order from the local pizza shop or burger place. Poston mentions that even with departments implementing wellness programs and exercise equipment many firefighters are falling into the obese category [9]. The more weight around the heart a person's risk for cardiac disease increases with age.

Obesity can lead to additional diseases such as diabetes, high blood pressure, and arthritis in the weight-bearing joints.

As firefighters carrying an extra 60 pounds, weight loss must occur if they are overweight. Having the right education and support system would be beneficial to all the members and families too. It is important to find and utilize the proper weight loss program adapted to that member. Everyone loses weight differently with a variety of methods that will not work for everyone else. The fire departments could collaborate with local nurses in the community to receive the crucial weight loss education. As a part of the program, members would also be able to have their vital signs assessed. A licensed nutritionist could be beneficial to keep everyone on the right track to making healthier food choices.

When the fire alarms rings and the trucks roll out to answer the call, firefighters respond in cold and hot temperatures. If the fire is working, which means that there is visible fire and smoke, crews fall into their roles of searches and extinguishing the fire? On every working fire, it is required to have a rehabilitation area run by paramedics and emergency medical technicians. The University of Pittsburgh Emergency Responder Human Performance Labs list monitoring vital signs, examining exposed skin, mental status, and hydration levels as assessments on the fire scene [10]. It is important that every 30 minutes of active firefighting, that the fire personnel come in for assessment.

On any fire scene, there is one person in charge, usually the first fire chief that arrives assumes command. Paul Graf, the fire chief for Goodwill Fire Company discussed his views on rehab on the fireground. He believes it is a priority to rotate crews in and out of a fire building every 20 minutes for rehab. This must be implemented on extremely hot days where the near 1000-degree fire temperatures enhance brutal working conditions. Paul mentions that if a crew member insists that they do not need rehab he will have them removed from the fire building. The priority is to keep his crews safe at all costs because their lives are literally in his hands [11]. In Delaware County, the fire dispatchers notify the commanding officer on a working fire of time increments of 10 minutes. If a firefighter pushes past the recommended 30 minutes, it puts them at a dangerous risk of collapse.

Health promotion and prevention is an ongoing process that can occur in the firehouse, at home, or on the fire grounds. In the volunteer service, most of the time we are responding from other locations when a call comes in. All of our active members have phone applications called 'Active 911' that notify us when dispatch comes in. Firefighters must arrive at the fire station as soon as possible. A call can be dispatched at 8 am or at 4 am, fire does not have a set schedule. In 2016, MacNeal, Cone, and Wistrom performed a study monitoring firefighter heart rates during fire call alert sounds. The data showed that when the loudest alert went off 72% of the firefighters' heart rates increased by 7 beats per minute [12]. This can take a toll on one's heart muscle over time into their golden years.

The volunteer firefighter must be in the best physical shape possible. Paid firefighters are at the station and have less distance to travel to the gear rack and on to the trucks. Volunteers need to get up out of bed or a chair, grab keys, put shoes on, and go and get in the car to travel to the firehouse. The adrenaline rush combined with being half asleep can be dangerous to ones' unstable health. A few ways firefighters can prevent this is by maintaining a healthy heart and 'slowing' down movements rising out of bed. The middle of the night calls is a hit and miss for getting manpower to come to the station. It is a different story when the dispatcher reports that it is a working fire, that is when people come out of the woodwork. The urgency of responding quickly increases a

firefighter's adrenaline and heart rate. If cardiac disease is present the outcomes could lead to tragedy.

When news of a firefighter line of duty death is reported, one can assume that occurred on the fire grounds. This is not necessarily the case, as some deaths have taken place after the fire call. A report by the Fire Fighter Fatality Investigation and Prevention Program summarized a line of duty death of a 46-year-old male that was driving home from a fire call and lost consciousness behind the wheel of his vehicle. The car struck other vehicles, and 911 was called immediately by a bystander. Despite intense lifesaving efforts by hospital emergency department staff, the firefighter was pronounced dead. "The autopsy report listed the immediate cause of death as atherosclerotic cardiovascular disease and listed diabetes mellitus, hypertensive cardiomegaly, and obesity as significant conditions contributing to his death. The report documented atherosclerosis with calcification and 95% stenosis (narrowing) of the left anterior descending and right coronary arteries. No coronary artery thrombi were found" [13]. Situations such as this remind us how important it is to incorporate health promotion and prevention in the fire service.

Most of the volunteer fire departments are financially supported through the local townships or boroughs and donations from the community. The volunteer fire departments have a relief association that provides funding for training and equipment. Funding for a health promotion and prevention program in the volunteer service can have long-term savings in costs of lost work time, worker's compensation, and disability [14]. This could not only be a lifesaving process but also save financial costs in the volunteer fire service. Numerous volunteer fire departments are not only struggling with manpower, but also financial income. For those departments, a cost-effective wellness program could consist of members bringing healthy home-cooked meals, exercise rotations as a part of training sessions, and providing information on nutrition and smoking cessation programs. There may be wellness services that may provide education at little to no cost to the fire department.

Volunteer firefighters turn to the community they serve for financial assistance in form of donations. We may drive along the streets on a weekend day and notice firefighters in their coats holding a boot in the middle of the street. These are called Tag Days, where money is collected for a certain amount of time on busy streets in the fire department's local. As people drive by and stop for red lights or stop signs, they have an opportunity to donate cash or coins in return for a tag stating appreciation for their support. Tag Days can be an ideal opportunity for the community to rally around the department to show support for health promotion. It is important to keep the community aware of fire department improvements.

Once a year, every volunteer fire department has what is called a fund drive. This is where the company has a mass mailing of letters to the entire community they serve asking for donations. This could be a prime opportunity for the department to notify residents of the new wellness program they would like to implement. Dallessandro suggests making fundraising campaigns more successful, organizations need to stand out to the donors by personalizing solicitations [14]. The brochure can explain what wellness programs are aiming to be implemented including the purchase of gym equipment if applicable. In some departments, local corporate businesses may donate either money or specific services such as gym memberships. These can help put a wellness program in place and additionally may assist in guest speakers such as nutritionists, and health care providers for education needs.

Most cigarette smokers will state how difficult it is to quit and may have tried on numerous occasions. There are a variety of methods to assist in quitting such as pills, patches, and gum. Smoking cessation programs have become quite popular over the past 20 years with a high number of successful stories. The International Association of Fire Fighters (IAFF) composed a wellness-fitness initiative policy in the past few years. Some of the recommendations include; candidates must be tobacco-free upon service, banning all tobacco products within the fire station, apparatus, fire scenes, and community activities. In addition, a fire department sanctioned tobacco cessation program shall be available to incumbent tobacco uses. There will also be short-term and long-term goals targeted for program participants [14]. This policy may apply to mostly paid fire departments, but hopefully, in the future, it can be implemented in the volunteer service.

When firefighters enter a burning structure, it is vital to wear a properly donned self-contained breathing apparatus (SCBA). These air packs are tanks that hold 30 to 45 minutes of fresh air that goes into a mask via a hose to the firefighter. Many toxins are present in the newer building materials that burn much faster than those years ago. Smoke inhalation is a condition where an unprotected person breathes in a high amount of smoke from the fire. It can be fatal, by suffocating the victim's lungs leaving them unconscious making it impossible to escape the fire. In every fire department paid and volunteer, it is mandatory to wear SCBAs for all firefighters entering the fire scene. Not following this procedure may lead to long-term effects such as cardiac obstructive pulmonary disease from breathing in harmful smoke.

As a part of training in the fire department, every firefighter who is SCBA certified must be requalified yearly on properly putting on the packs correctly and safely. In some cases, the mandatory use of SCBAs is not enforced by the commanding officer on the scene. Feyst spoke of how we still have firefighters responding to different types of calls where a dangerous environment is present who are not wearing their SCBA [15]. It is important that SCBA training be often at the fire station, in addition, maintenance and operational checks must be done at least weekly and after every use. The seasoned firefighters that have been in the service for well over 20 years speak of the 'leather lungs' days.

Looking back over the last few decades in the fire service photos, we will see firefighters in long coats and high hip boots. On rare occasions, we might see one of them wearing an SCBA on the fire scene. The term 'leather lungs' was defined in a book by Gerald Tracy, a retired Battalion Commander of the Fire Department of New York (FDNY) as those firefighters how through years of fighting fires, hardened their lungs to the point of withstanding exposure to thick nasty smoke. In the 1970's, the FDNY were battling the civil unrest and arson for profit fires by the hundreds daily in the city. These fires each went to multiple alarms which meant that the fires were out of control and fast traveling [16]. This once an honored title and tradition lead to many firefighter deaths within five years as a result of not wearing SCBA.

It is no longer the days of the 'leather lungs', and in the present day we have much more dangerous and deadly chemicals that are released when burned in fires. Making sure that every SCBA certified firefighter must be trained and refreshed on donning the air packs correctly. When wearing the SCBA masks, it must have the proper seal around the firefighter's face to prevent smoke from getting in. Some of us have found out the hard way that it only takes 10 seconds for the smoke to begin to burn your skin when a mask is not on properly. Being a fit and healthy firefighter helps extend the air in an SCBA, as opposed to one that smokes can decrease their airtime to half. A typical SCBA tank has approximately 30 to 45 minutes of air depending on the manufacturer.

Firefighters are real-life superheroes to many children who excitedly wave as we drive by in the fire engine. Our fire department had a fire call the other day, and I was the officer in charge of the engine riding up in the front seat. We were stopped at a red light and a car was pulling out of a parking lot and the kids in the backseat were all waving to us. I made sure to wave right back and the mother driving smiled and waved. It is just as important to have role models within the fire department. Firefighter Nation published an article about role models in the fire service and mentioned that firefighters and junior officers are consciously and unconsciously modeling their behavior on that of their superiors, those superiors must exemplify good leadership [17]. Setting a good example by participating in a wellness program can eventually save the lives of up-and-coming members.

Wellness programs in volunteer fire departments are more difficult to mandate due to the members volunteering their time. It is understood that we cannot force certain criteria, but if we educate and discuss the evidence out there this may be a wake-up for members. A major obstacle for many volunteer fire companies is where to start. Some steps can be implemented to make the initial collaboration of the program smoother:

- Form a wellness program committee.
- Appoint a chairperson of the program to research the latest information and updates to wellness promotion and prevention studies.
- Utilize methods already in the fire station.
- Have monthly meetings to keep the membership informed.
- Keep the community informed where their donations are going and what progress is occurring with the program.

A committee can bring new ideas and thoughts to putting together a wellness program in a fire station. Members may know outside people that possibly may donate their time or services such as physical training. Using in-station training for physical exercise time is cost-effective and beneficial for members. For mealtimes, members and community residents may bring nutritious foods for a Healthy Food event and share recipes. It is important to keep the fire company members informed of progress with the program. This can be done by posting material at the station or via electronic emails to the members.

It is key to have one person who researches the latest information about health promotion and prevention. Health studies are providing constant evidence of changes and new statistics for better health. The

fire department's relationship with the community that they protect is essential. Having a wellness program can give residents assurance that the firefighters protecting the town are healthy and fit. The fire company can have a community health day monthly to keep residents involved. This could also provide additional opportunities for donations and connections to improve the program

A health promotion and prevention program in a volunteer fire department can help make an impact on safer firefighting. The statistics of line of duty deaths I believe will decrease the longer the programs are implemented. Setting positive healthy examples can trickle over to other local departments. We need to take care of our volunteers because we are not getting any younger. It is time the volunteer fire departments start leaving positive and healthy carbon footprints.

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