

Ergonomics Research Techniques

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Week – 01

Lecture - 05

Lec 5: Dutch Musculoskeletal Questionnaire (DMQ)



DMQ

The Dutch Musculoskeletal Questionnaire

Welcome back to this particular class, where we will be talking about DMQ, which is the Dutch musculoskeletal questionnaire. In the last class, we talked about the NIOSH survey for musculoskeletal disorders, and this is another survey that can be used to understand or get the prevalence data in different dimensions through this particular questionnaire. So let us understand it.

Lec 5: Dutch Musculoskeletal Questionnaire (DMQ)

Introduction

- The Dutch Musculoskeletal Questionnaire (DMQ) allows to measure work-related musculoskeletal risk factors and symptoms.
- It measures in worker populations.
- It measures in quick yet standardize way.
- The standard version of questionnaire
 - 9 pages with around 25 questions per page
 - Each question to be filled by workers
- Completion time around 30 min.
- A short version (4 pages) and an extended version (14 pages) are also available.

1:21 / 37:07 • Musculoskeletal Questionnaire

So the Dutch musculoskeletal questionnaire allows us to measure work-related risk factors and symptoms, which are very similar. However, the questionnaire types are a little different. So, it helps you to understand or measure; technically, we call it measurement.

So maybe we can measure the work-related in scale. So, it is very important that the Dutch musculoskeletal questionnaire is very specific to work-related musculoskeletal discomfort. So, it measures the worker population quickly yet standardized because it is very easy. We get the data quickly, but it is a standardized process. The standard version of the questionnaire has two versions: one is the short version, and the other is the large version.

So, one is nine pages with around 25 questions per page, and each question is to be filled out by the worker, and it may take around 30 minutes. So it is a little lengthy, and another version is there, which is a short version we call it. It is only four pages long, and it is an extended version that is more than nine pages, which is 14 pages long. So the standard one is nine pages, the short version is 4 pages, and the extended version is 14 pages. Now the question is, which one are you going to use? It absolutely depends. As I keep on saying this, it is not defined, right? So it absolutely depends on what is your interest. What are your research objectives or research questions? So before you introduce any one of them, first you need to read them through, you need to understand what are the varieties of information that you are going to get from these three types, and based on that, you can use which one is suitable to you, and you can use any one of them, but the pattern is quite similar.

Lec 5: Dutch Musculoskeletal Questionnaire (DMQ)

Introduction

- The questionnaire seeks to obtain a simple representation of relationship between work tasks and musculoskeletal symptoms.
- Work-related musculoskeletal symptoms are seen as result of high internal physical loads, caused by
 - Poor postures
 - Movements
 - Forceful exertions
- Other factors are
 - Other working conditions
 - Individual factors (gender, age)
 - Psychosocial aspects
 - Lifestyle

3:46 / 37:07 • Musculoskeletal Questionnaire

The questionnaire seeks to obtain a simple representation of the relationship between work tasks and musculoskeletal symptoms. Work-related musculoskeletal systems are seen as the result of high internal physical loads, which are caused by poor posture, movements, and forceful exertion. These are the three major occupational factors. One is poor posture, movement and forceful exertion. Now, here the question is if you use a Dutch musculoskeletal questionnaire and you find that yes, there is a problem, and the problem is connected to posture. You may make a decision whether you would like to go for a posture evaluation or not.

So, it is a preliminary tool, but it gives you a direction on where and how you can take your research further. Other factors it is not only these three occupational factors; other factors may be some working conditions, extreme environments, maybe a lot of noise, maybe vibration, individual factors like gender, age, presence of pregnancy, and many other things, psychosocial aspects, and lifestyle. These are also factors that influence us, and we will get an understanding of how MSD is associated with these factors. So, from the Dutch musculoskeletal questionnaire, we get this kind of information. So the questionnaire includes some sections, and we will take those sections one by one.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Introduction

- The questionnaires include the following sections:
 - Background variables**
 - Age
 - Gender
 - Education
 - Duration of employment
 - Work history
 - Shift work
 - Tasks**
 - Prevalence rates
 - Perceived heaviness of task demand
 - Musculoskeletal workload**
 - Postures
 - Force
 - Movement

5:42 / 37:07 • Musculoskeletal Questionnaire

First is background variables, like what is personal information. So, you need to know the age, gender, education, duration of employment history, work history, and shift work. So you can understand how many variables from the first portion, the first section of your survey; you have six total variables, an age which is very important, which is very much connected or influencing factors of musculoskeletal disorder, gender, education, duration of employment, work history, shift work. Then, we get an understanding of the task, prevalence rates, and perceived heaviness of task demand. So it is not only we talk about the task; we describe the task, and we gain an understanding of how heavy that task is.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Introduction

- The questionnaires include the following sections:
 - Work pace and psychosocial working conditions**
 - Demands
 - Control and autonomy
 - Work organization & social support
 - Work satisfaction
 - Health**
 - Musculoskeletal disorder
 - More detailed symptoms
 - Lifestyle**
 - Perceived bottlenecks and ideas for improvement**
 - Suggested by workers themselves

7:07 / 37:07 • Musculoskeletal Questionnaire

We also get that type of information from this particular questionnaire. So, we get the perceived heaviness of the task. Musculoskeletal workload includes posture, forces, and

movement. Also, we get information about the work pace. What is the pace? Mainly, it is the perceived pace and the psychosocial working condition, like how I feel the demand, control, and autonomy because you understand musculoskeletal disorder is not only the response to physical discomfort.

It is very much connected with your psychosocial aspect. So, to understand that control and autonomy in your particular work setup, if it is not in the optimum range, it may cause musculoskeletal discomfort or disorder. So we also get an understanding of control and autonomy in the job, the type of work organization it is, and the social support and work satisfaction. So, in the same job, if I am satisfied, I may not feel the pain or difficulty in working. In the same job, if somebody does not like, or is not satisfied with him or her, he or she may find a lot of body aches, maybe neck pain, elbow pain, trunk pain, and many other things.

So these are the variables, four major variables of the work pace and psychosocial working conditions. Also, we get an understanding of the health that is the musculoskeletal disorder and more detailed symptoms. We talk about lifestyle; that section also presents perceived bottlenecks and ideas for improvement. So here, it is more participatory in nature. So you get responses, or we get suggestions from the participant, from the subject, or from the workers themselves.

So they suggest what bottlenecks are present in this particular activity or what varieties of things are possible, and they feel that it will improve the situation. So, you will get a lot of participatory approaches from this particular survey or questionnaire. So, musculoskeletal workload, that is, the posture, force, and movement, is addressed in 63 questions, in total 63 questions. These questions are categorized into again seven indices and four separate questions. The first one is the force exertion, dynamic load, static load, repetitive load, ergonomics environment, vibration, and climate.

Lec 5: Dutch Musculoskeletal Questionnaire (DMQ)

- Musculoskeletal workload (postures, forces, movements) is addressed in 63 questions.
- These questions are categorized into 7 indices and 4 separate questions.

Introduction

Force exertion	Dynamic loads	Static loads
Repetitive loads	Ergonomic environment	Vibration
Climate		

9:35 / 37:07 • Musculoskeletal workload

Now, you can understand how detailed it is. Maybe in a particular set, you only have force as a factor, along with vibration. Maybe the rest of the factors are not present or present at a negligible rate. So when you talk about the intervention and when we talk about starting your design process, you can have a very detailed idea of what the impacting factors are and where you start your design intervention. So, this particular tool was very helpful in that particular case.

So, we have 7 indices: force exertion, dynamic load, and static load. So dynamic load separately, static load separately, repetitive load, ergonomics environment, vibration, and climate. Everywhere, you have a number of questions. In total, we have 63 questions. That is why I suggest everyone download this Dutch musculoskeletal questionnaire, and you should go through it.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Name	Content
Force exertion	Lifting, pushing and pulling, carrying, forceful movement with arms, high physical exertion, lifting in unfavourable postures, lifting with load away from the body, lifting with twisted trunk, lifting with load above the chest, lifting with bad grip, lifting with very heavy loads, short force exertion, Unexacting great force on hands
Dynamic loads	Trunk movements (bending and/ or twisting, movements of neck, shoulders or wrist, reaching, making sudden and/ or unexpected movements, pinching, working under at or above shoulder level
Static loads	Lightly bent, twisted trunk posture, heavily bent, twisted trunk posture, postures of neck or wrists
Repetitive loads	Working in the same postures, making the same movements with trunk, arms, hands, wrists or legs; making small movements with hands at a high pace
Ergonomic environment	Available working space, no support, slipping and falling, trouble with reaching things with tools, not enough room above to perform work without bending
Vibration	Whole-body vibration, vibrating tools, driving
Climate	Cold, draught, changes in temperature, moisture
Uncomfortable posture	Having often to deal with uncomfortable postures at work
Sitting	Sitting often at work
Standing	Standing often at work
Walking	Walking often at work

11:40 / 37:07 • Musculoskeletal workload > Seven indices and four separate question

Now, let us understand the content of each index. Now, when we are talking about force exertion, we are going to talk about lifting, carrying, pulling, pushing, forceful movement with your arm, high physical exertion, and lifting in an unfavorable posture. Here, force exertion is associated with posture. So, a lot of questions are associated with such factors. All these factors are going to be evaluated under force exertion, and we are going to get those indices.

Now, we are talking about dynamic load in static load. When we are talking about dynamic load, it is trunk movement. So what kind of movement is it? It is an extension, flexion, twisting, and side bending; what is it? So, we will be talking about all these factors, mainly trunk movement. In static load, of course, if it is less bent but is held for longer hours, it has a twisted trunk posture.

So, it is twisted. Suppose I am away from my midline, body midline, but I am holding; it is not maybe 10 degrees or maybe 6 degrees or 7 degrees. However, I am holding it for 3 hours. Now, definitely, that is going to give you a lot of stress on your trunk muscles. So, understanding those static loads again is going to give you a direction. How do you modify it? How do you intervene in it? Then, repetitive load.

So working in the same posture, making the same movement with the trunk, arm, hand, wrist, and legs, making all small movements with fingers, all those things come under repetitive movement. Ergonomics environment, so available working space, no support, maybe the floor is very slippery, uneven, so they are falling. Trouble with reaching things with tools, not enough room to perform. So maybe I am working here for a particular tool, and I have to reach 2 meters. I always have difficulty, or I am always bending myself to

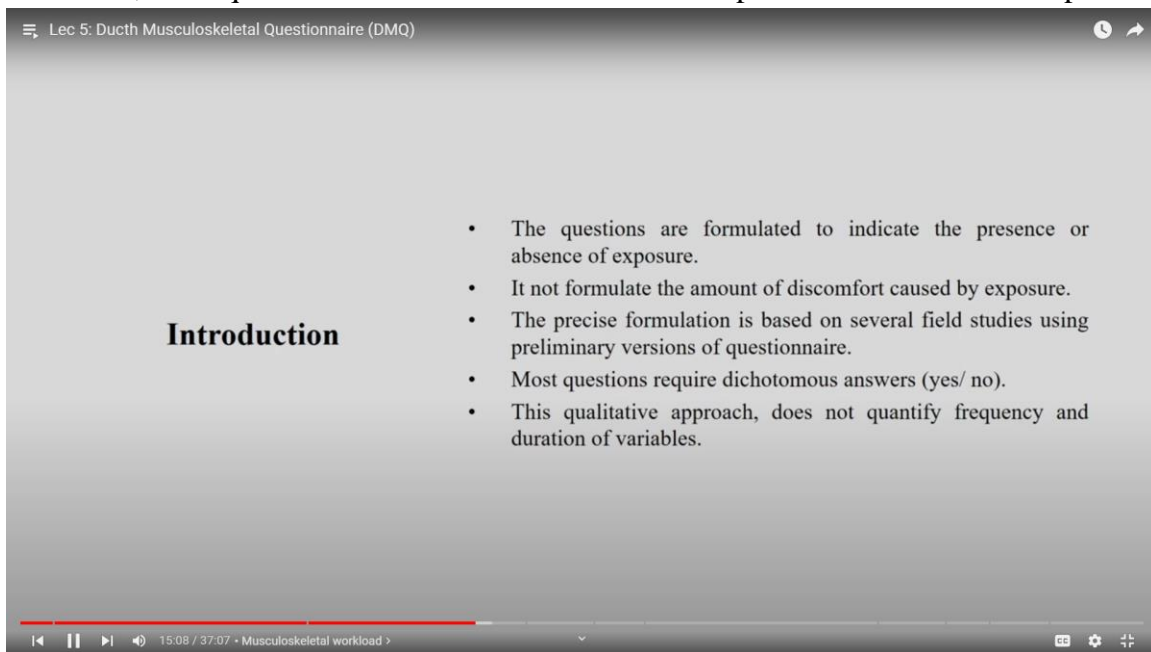
get

those

things.

So, such factors are considered here. Vibration is definitely either whole-body vibration or hand-arm vibration that we are going to get an understanding of in this particular section. Climate, extreme environmental conditions. So either very hot or very cold is going to cause a lot of discomfort. So those things also are going to get evaluated.

Uncomfortable posture, sitting at different rates, standing, walking, all those things also we get an understanding about these factors in this particular, these seven indices, 63 questions. Now, moving forward, we will give some more introduction about this and how we are going to use this. So we have 63 questions and 7 indices. Now, how do we introduce them? So, these questions are formulated to indicate the presence or absence of exposure.



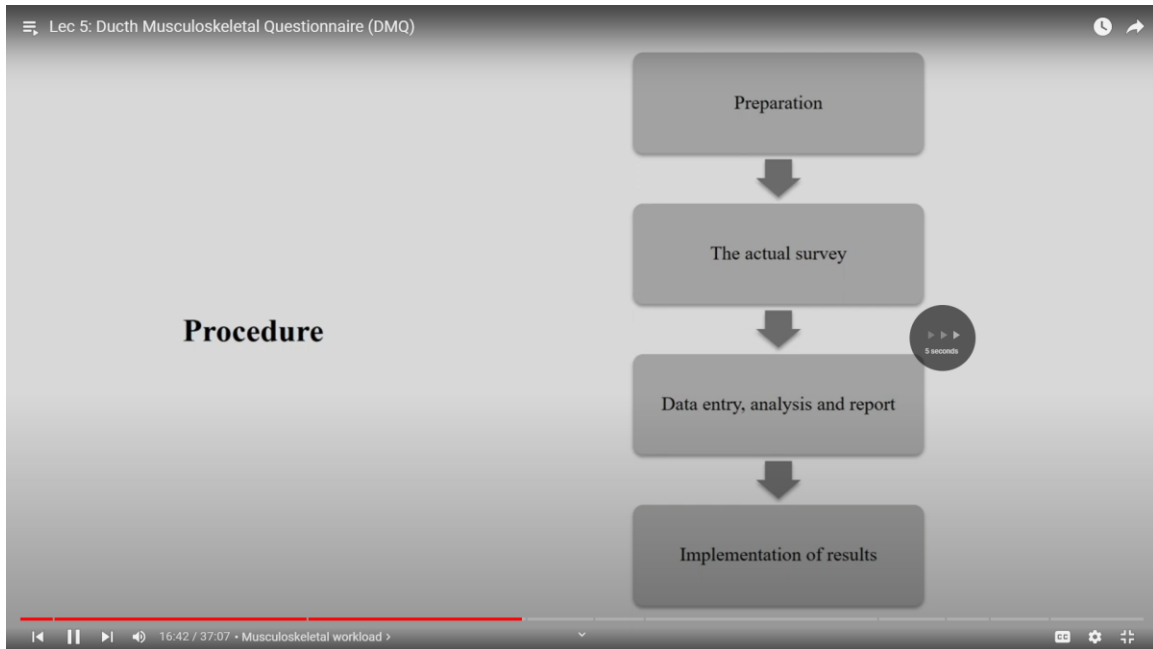
Lec 5: Duch Musculoskeletal Questionnaire (DMQ)

Introduction

- The questions are formulated to indicate the presence or absence of exposure.
- It not formulate the amount of discomfort caused by exposure.
- The precise formulation is based on several field studies using preliminary versions of questionnaire.
- Most questions require dichotomous answers (yes/ no).
- This qualitative approach, does not quantify frequency and duration of variables.

15:08 / 37:07 • Musculoskeletal workload

Vibration is there or not. Extreme climate is there or not. So, if you do not formulate the amount of discomfort caused by the exposure, then you can ignore it. The precise formulation is based on several field studies using preliminary versions of the questionnaire because it is not that in one day or one year, it has been developed, it has developed, and then during different field studies, field observation, and experimental studies, it was evolving. So many times, it happens that they publish the modified version. So this qualitative approach does not quantify the frequency and duration of variables, which is not possible over here, but only a qualitative understanding of all these factors.



So first, what should you do? You should prepare how you collect data, the actual survey that you conduct, then data entry, analysis, and report. So mostly, we get percentages, and once we have percentages, we can do some kind of association and correlation among each variable that is possible with this data, and then you can implement that particular result.



Now, when I am talking about preparation, exactly what do we do? First, we define the population for whom we are going to introduce this particular tool. So we define it suppose for my case in a particular study I want to do for the bank worker, maybe a cashier. So, my definition of my population is cashier in some national banks.

So I know whom I am talking about. Now, the introduction of that particular project in the worker group. So we will go, we will talk, these are the objectives, and we will introduce those cashiers to that particular study. Analysis of prevalent tasks in that particular group using this thing and defining the way the DMQ is administered to the workers that we will do.

So we are ready to administer. Before we introduce that DMQ, we should have these things ready. Now, the question is, why do we need to prepare our subject? If our subject means the participants are not aware of the objective of the study, they may not be able to give you proper answers. Now, it is not that if you explain it, you will get 100 percent correct data. Sometimes, you get some kind of wrong information. So there are some statistical methods through which you get the outlier done so that you remove those data, which is actually disturbing.

But if you prepare it this way, hopefully, your number of outliers will be a little lower. So, defining the population at risk. It is very easy, as I explained, but still, it is depicted in a detailed way here. So groups of workers should be selected who are performing more or less identical tasks as I mentioned here for this particular example, I have taken bank cashier. This enables the identification of an association between symptoms found and specific working conditions.

The screenshot shows a video player interface for a lecture titled "Lec 5: Duch's Musculoskeletal Questionnaire (DMQ)". The slide content is as follows:

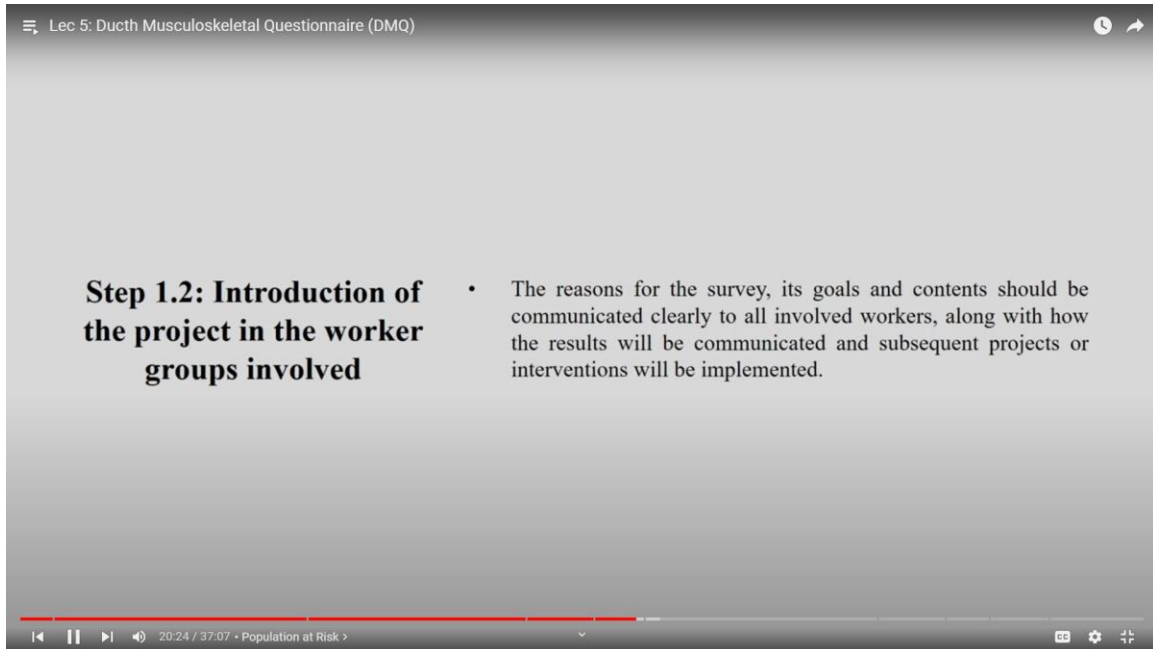
Step 1.1: Defining the population at risk

- Groups of worker should be selected who are performing more or less identical tasks.
- This enables the identification of an association between symptoms found and specific working situations.
- A reference group known to be exposed to a lesser physical workload should also be used to enable better comparative interpretation of results.
- A minimum of 20 workers per group is recommended to enable valid conclusions.

The video player controls at the bottom show a progress bar at 19:20 / 37:07 and the current slide title "Population at Risk".

The reference group known to be exposed to a lesser physical workload should also be used to enable a better comparative interpretation of that particular result. Here, the requirement of a minimum of 20 workers per group is recommended to enable a valid conclusion. So if you have group 1, group 2, and group 3, you should have 20-20

participants so that you can have some good comparison because you have to perform some kind of statistics. So this is a requirement.



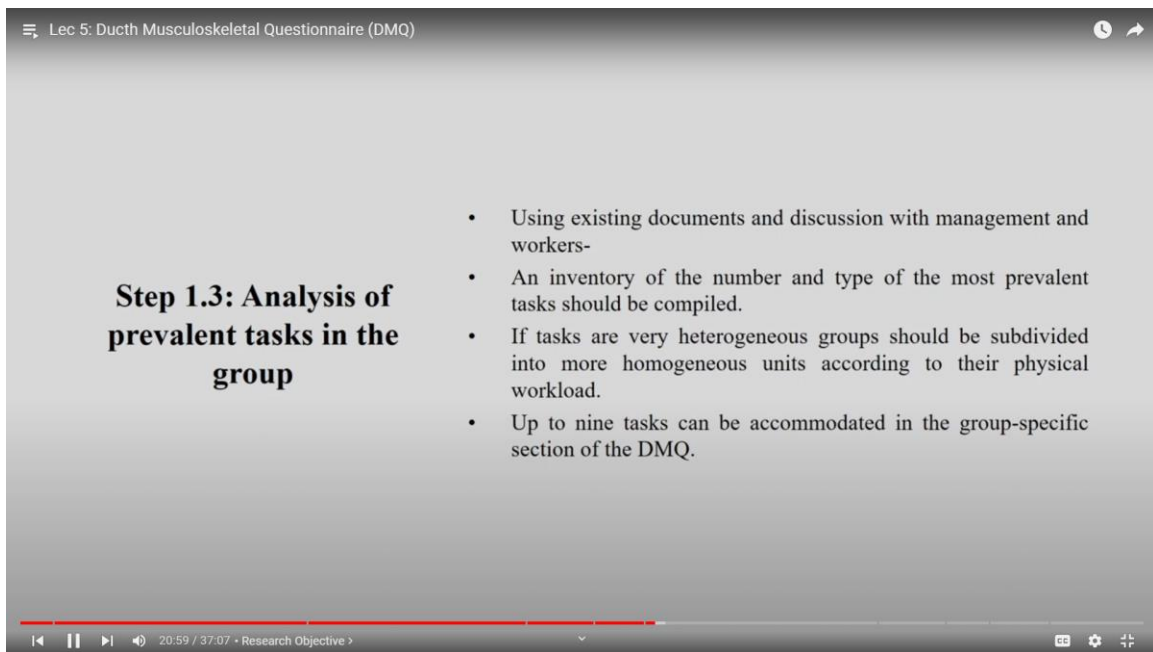
Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Step 1.2: Introduction of the project in the worker groups involved

- The reasons for the survey, its goals and contents should be communicated clearly to all involved workers, along with how the results will be communicated and subsequent projects or interventions will be implemented.

20:24 / 37:07 • Population at Risk >

Now, the project will be introduced to the worker. So, as I mentioned, you should tell more about the research objective so that they are aware and the respondents participate actively in the study.



Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Step 1.3: Analysis of prevalent tasks in the group

- Using existing documents and discussion with management and workers-
- An inventory of the number and type of the most prevalent tasks should be compiled.
- If tasks are very heterogeneous groups should be subdivided into more homogeneous units according to their physical workload.
- Up to nine tasks can be accommodated in the group-specific section of the DMQ.

20:59 / 37:07 • Research Objective >

Analysis of prevalent tasks in that particular group. So, using existing documents and discussions with management and the worker, an inventory of the number and type of most

prevalent tasks should be compiled. If the tasks are very heterogeneous in nature, they should be subdivided into more homogeneous units according to their physical workload. Now, here I talked about cashiers, maybe if we are talking about only bank employees.

So bank employees, maybe we can have a subdivision cashier, customer care representative, the person who is handling only some kind of documents or maintaining the inventory. So maybe we can subgroup them. So if it is only bank employees under bank employees, you can have such a small, small categorization. So, it is a very close work activity because we are talking about musculoskeletal disorders.

So here are a lot of physical activities. So, according to the physical load, we can categorize them. So that we can categorize them according to the physical load and, after that, define the way the DMQ is administered to the worker. So you need to explain them.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

- Three possible options are:

Step 1.4: Defining the way the DMQ is administered to the workers

- Postal survey (inexpensive and easy, but risk of low response)
- Distribution in the workplace with a request to complete the questionnaire during or after working hours
- Group sessions during working hours in which each worker is invited to complete his/ her questionnaire

22:13 / 37:07 • Research Objective

So, there are three possible options. One postural, you know, postal survey. So you can send the questionnaire to them by post, and you ask them to fill it out and post it back. That is one option. Distribution in the workplace with a request to complete the questionnaire because I mentioned now this is a very lengthy thing. The original one is nine pages, the short version is 4 pages, and the extended version is 14 pages.

So, it is a very lengthy thing. Even if it is a short version, it is still lengthy. So it takes time. When we talk about DMQ, it takes time. So it may happen that you prepare the subject, you take all the data, and you distribute the questionnaire to them and request it. Okay, fine. Once you finish it up after your working hours, maybe you can give it back to the interviewer or the researcher, or you can have some kind of group session.

So you know, in a group, people are sitting, you are explaining, and everybody is filling up each section. So, there are three possible ways we can collect our data. Now, we talk about the actual survey because it is a very tedious job.

Step 2: The actual survey

- In this phase, the DMQ has to be printed and distributed.
- Response rates have to be monitored to be able to send reminders to those who do initially respond.
- It is extremely important that a large proportion of the workers selected actually participate in the survey.

This DMQ is quite tedious. It takes time. Filling it out takes 30 minutes, as I mentioned in the process. So, you need to know the detailed steps or have a detailed understanding to avoid any kind of discrepancy in the data collection. So, in this phase, DMQ has to be printed and distributed. Response rates have to be monitored to send the reminder.

So somebody is not sending within six days or seven days. So you have to send the reminder. It is extremely important that a large portion of the workers selected actually participate in this survey because it is a survey, and there is always a possibility many of them will complete half, many will not be able to understand, and they will drop out. So, it is always best if you target 20 data sets; actually, maybe you have to distribute it among 40 or 50. So it absolutely demands what type of population you have, who your subjects are, and how good they are at responding.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Step 3: Data entry, analysis and report

- The use of statistical program to calculate results is recommended.
- A spreadsheet may be sufficient for computing the most important indices.
- Reporting the results of the survey can be done on the basis of a few tables summarizing the main findings:
 - Response and general characteristics of the workers involved.
 - Tasks: prevalence and perceived exertion
 - Physical workload
 - Psychosocial workload
 - 12-month prevalence of musculoskeletal symptoms per body area

25:28 / 37:07 • Research Objective >

So this is very important, and it also needs a lot of follow-up. So that we can have our survey done; once it is there, now everything is with you. Now, you have to do the data entry, analyze, and prepare the report. Now, for data entry, you can use any kind of software; maybe we can use SPSS or NCSS, or maybe you can use simple Excel to first look at your data. So, with the use of a statistical program, you can calculate the result.

Normally, in the traditional process, we use a normal Excel spreadsheet to understand the length and breadth of the data and how it actually looks. After that, we go for analysis. So, we can enter basic data in an Excel spreadsheet. So reporting of the result of the survey can be done on the basis of a few tables summarizing a few major findings which are expected to come. So, responses and general characteristics of the workers involved will come from the background.

What is the task, prevalence and perceived exertion, physical workload, psychosocial workload, and 12 months prevalence of musculoskeletal symptoms per body area? So, for each body part, what is the kind of annual prevalence? 12 months mean annual prevalence data that we are going to get at the basic level. Once we have this information, maybe according to the research objective, we can do another kind of analysis. So, data should be presented for all worker groups selected and the reference population.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Step 3: Data entry, analysis and report

- Data should be presented for all worker groups selected and the reference population.
- If the number of respondents is greater than 20, differences between groups should be statistically tested for significance.
- A software package (LOQUEST) has been developed for data entry, data analysis and auto reporting of the main results.

27:26 / 37:07 • Research Objective >

Again, this is not very specific. This is based on your objective. So maybe you have two comparative groups, or you have only your working group where you want to present it. So, it is absolutely not defined. It absolutely depends on your study. If the number of respondents is greater than 20, differences between groups should be statistically tested for significance.

Whether it is statistically different or not. Some kinds of software packages are available by the same group of researchers. So, if needed, you can use that as well. However, in most cases, people use their own analytical method to understand or analyze that particular data. Now, coming to the implementation. On the basis of the screening results, those worker groups or workplace or workplaces require a more thorough ergonomic analysis.

So, suppose I am talking about here you have these five categories, right? Now, here you see, age is a factor. When we are talking about physical load, posture is a factor. So maybe you can start understanding what the relation is between this particular job and these two variables.

Or maybe not age, maybe duration of exposure. So, duration of exposure and the posture and this annual prevalence. How are these three connected? So we may start understanding. So, absolutely, it is in which direction my analysis will go. I cannot tell you right now. It is absolutely based on the research objective you have to derive. So I told you how you collect data. What are the varieties of data you will get? But how do you interpret it? How do you take it further? It is up to you.

So you can start you know exploring it in more and then maybe if you have any doubt

you can enquire back. So following implementation a second survey using DMQ can be conducted to you know quantify the improvement in workload and health among the workers involved. Also this part is not mandatory you can have you cannot have.



Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Advantages

- Standardized method.
- Relatively inexpensive and easy.
- Broad comprehensive overview of possible risk factors and morbidity.
- No technical equipment necessary.
- Input from workers themselves.
- Can be used to evaluate the effects of solutions implemented.

31:49 / 37:07 • Advantages >

You may not have. So it is absolutely up to your objective. So what are the advantages? Let us talk about that because I am taking this whole process in this way. First, I am explaining the tool. I am telling you how the procedure is the procedure to implement it and what are the advantages and the limitations of this particular tool. So you can really understand whether this tool is helpful for your study or not.

If it is not useful, then what else? So you have a basket. You have a basket of methods. You have a basket of tools. You can pick 1 1 1 depending on your research.

So, it is a standardized method. Relatively inexpensive and easy. I said inexpensive depending on what kind of expense you are talking about, as it is a simple pen-and-paper method, which is why it is inexpensive—broad, comprehensive overview of possible risk factors and morbidity. No technical equipment is required. Input from workers themselves helps to understand the participatory approach and can be used to evaluate the effect of the solution implemented.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Disadvantages

- Self-reported data (detailed exposure measurement not possible).
- Reference group recommended but may not always be available.
- Less suitable for smaller groups of workers.
- No quantification of risks.
- Cooperation of management and workers is crucial.
- Data entry can become laborious when groups are large.
- More-detailed data analysis requires statistical knowledge.

32:13 / 37:07 • Limitations >

These are the advantages. Some limitations include self-reported data. So, there is always some chance of bias. So it is absolutely how you are explaining and convincing them to participate honestly in your study. So, it comes through experience.

It comes through knowledge. Also, what kind of population are you dealing with? Reference groups are recommended but may not always be available, as I mentioned earlier. Less suitable for smaller groups of workers. It is not possible for small groups. There is no quantification of risk. Cooperation between management and workers is very, very crucial because it takes time and understanding.

Both things. Specifically, it is a time-consuming tool. So, 30 minutes from a work shift if you are taking it is a huge thing. Manpower time. So it needs much cooperation from the management and the workers.

Data entry can become laborious because it is a huge set of data. Nine pages of data. Fourteen pages of data. It is very detailed. More detailed data analysis requires statistical knowledge. Of course, without understanding statistics much qualitative analysis is required over here.

So, if you initially get only the percentage value. However, how do you take it further? If you do not have statistical understanding, you may not be able to interpret the data correctly. So these are the advantages or disadvantages of this particular tool.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Standard & Regulations

- The DMQ can be used to comply with the need for employers to carry out a risk assessment of physical working conditions.
- It should be stressed that a DMQ survey is only a tool to set priorities for further analyses and development of solution.

34:18 / 37:07 • AdvantagesDisadvantages >

When we are talking about standards and regulations, DMQ can be used to comply with employers' need to carry out a risk assessment of physical working conditions so management can use it. It should be stressed that the DMQ survey is only a tool for setting priorities. So, it gives an understanding of your priority for further analysis and development solutions.

Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)

Approximate training and application time

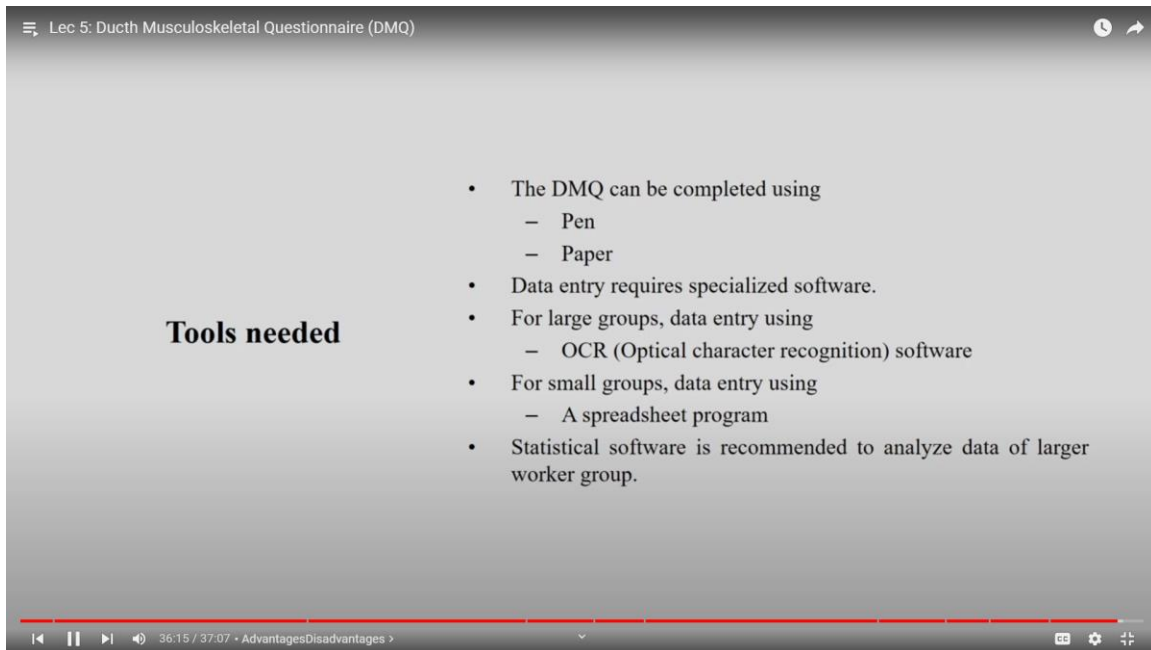
- No special training is required to conduct a DMQ survey.
- The time to complete the DMQ (standard edition) is between 20 to 60 min.
- It depends in particular on the educational background of the worker.
- For workers with less education, the short edition of the DMQ is most appropriate.

34:39 / 37:07 • AdvantagesDisadvantages >

Similarly, for a DMQ also. As I mentioned, it takes around nine pages, takes around 30 minutes for four pages, maybe 20 minutes, and the extended version takes kind of 60 minutes. So it is a kind of very lengthy thing. It depends, in particular, on the educational background of the worker. So, the NIOSH survey can be used for any variety of

populations. A layman, a very educated person, or someone with a low socioeconomic background or high socioeconomic status can use the NIOSH survey.

However, for DMQ, you need some kind of minimal requirement of literacy and education and all those things because they have to respond to it. So it depends. So, the background is important. For workers with less education, maybe we recommend that you use a short version.



The screenshot shows a video player interface. The title bar at the top reads "Lec 5: Ducth Musculoskeletal Questionnaire (DMQ)". The main content area displays a slide with the heading "Tools needed" and a bulleted list:

- The DMQ can be completed using
 - Pen
 - Paper
- Data entry requires specialized software.
- For large groups, data entry using
 - OCR (Optical character recognition) software
- For small groups, data entry using
 - A spreadsheet program
- Statistical software is recommended to analyze data of larger worker group.

The video player controls at the bottom show a progress bar at 36:15 / 37:07 and a title "AdvantagesDisadvantages".

However, it may be difficult to administer. So, this is the information you should keep in mind before you go and choose this tool to use for your study. So that is all the tools you need, pen and paper, and data entry. You can have your computer or Excel to understand the data or to see the data. Also, maybe SPSS or any other software statistical software you can use, or you can buy their own software, which is available. It is absolutely you how you analyze.

So these are the things that are required, but you can start with a simple pen and paper method. So that is all for DMQ. We could use some other tools in our next class. Thank you.