CHAPTER 3

RESEARCH METHODOLOGY

3.0 INTRODUCTION

In chapter 3, research methodology will describe in details about research design, study area, study sample, sampling strategy, data collection techniques, and data analysis used in this study.

3.1 RESEARCH DESIGN

For this research, the type of study is comparative cross-sectional study. This study has been carried out to assess the noise exposure and the stress responses in the textile factory. Noise level exposure was measured by conducting area monitoring and personal monitoring, for the monitoring, highly and low exposed workers have been chosen to make the comparison: On the other hand, stress was measured by using questionnaire.

3.2 STUDY AREA

Textile industry had been chosen to carry out the monitoring. There were several work stations including spinning, weaving, grey checking, desizing, and lastly finishing. Hence for the highly exposed workers, the sampling area is only conducted in the weaving and spinning work station while for the low exposed workers, the sampling area will be at the pre-spinning and finishing work station in the industry.
3.3 STUDY SAMPLE

There are approximately 100 workers that are separated into three shifts but due to some internal problems of the industry, research only carried out the in the morning shift. The populations of the selected work stations for the monitoring were listed in Table 3.1.

<table>
<thead>
<tr>
<th>Work Station</th>
<th>Population of workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaving and Spinning</td>
<td>24</td>
</tr>
<tr>
<td>Pre-spinning and Finishing</td>
<td>29</td>
</tr>
</tbody>
</table>

The respondents were identified by using Cochran’s sample size calculation. By assuming the researcher has set the level of acceptable error at 5%. Using the Equation (3.1) and (3.2) (Baarttillet, 2011).

\[
n_0 = \left( \frac{t}{d} \right)^2 \frac{p(1-p)}{\chi^2}
\]

Equation (3.1)

\[
n_0 = (1.96)^2(0.5)(0.5)/(0.05)^2
\]

Where;

\( t = \) value for selected alpha level of 0.025 in each tail = 1.96
\( d = \) acceptable margin for error for proportion being estimated = 0.05

\[
n_1 = \frac{384}{1+384/\text{population}}
\]

Equation (3.2)

Where;

\( n_1 = \) required return sample size according to Cochran’s formula = 384

The study sample was divided into two groups which are highly exposed and low exposed group. The highly exposed group is from the weaving and spinning work
station and the low exposed group is from pre-spinning and finishing work stations. Thus, the minimum sample size for:

1) Weaving and Spinning work stations:

\[ n = \frac{384}{1 + \frac{384}{24}} = 23 \text{ samples} \]

2) Pre-spinning and finishing work stations:

\[ n = \frac{384}{1 + \frac{384}{29}} = 27 \text{ samples} \]

Therefore, the total study samples will be collected are 50 samples.

3.4 SAMPLING STRATEGY

Multi stage sampling strategy was applied in this study including purposive sampling and random sampling shown in Figure 3.1.

![Figure 3.1: Sampling Strategy](image)