

# Validity of the work productivity and activity impairment questionnaire for patients with asthma (WPAI-asthma): Results from a web-based study

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## BACKGROUND

The WPAI-asthma is a questionnaire measuring self-reported productivity loss associated with asthma. It consists of questions about absence from work due to asthma problems, hours actually worked, the reduction in productivity at work attributed to asthma and about the reduction in productivity while performing regular activities. The questionnaire relates to the previous seven days.

## OBJECTIVE

The purpose of this study was to carry out validity analyses of the WPAI-asthma questionnaire.

## METHODS

### Participants in the study:

- Members of three web-based panels in Sweden, Denmark and Norway
- 18-65 years of age
- Individuals who stated they were asthmatics and that they were prescribed asthma medication by a doctor

### Data collected in the survey:

- The generic health status instrument SF-36
- WPAI-asthma
- Health care resource use the previous month translated into costs using Swedish unit costs:
  - hospitalizations
  - A&E visits
  - physician visits
  - nurse and physiotherapist visits
- Use of prescribed asthma medication

### Validation:

- The WPAI-asthma variables considered to be relevant for validation purposes were:
  - absence from work
  - reduced productivity while working,
  - reduced productivity while performing daily activities

In the case unemployed asthmatics, the activity impairment variable was used in the validation. Unemployed individuals included student and house-persons.

- Pearson correlation coefficients were calculated between each productivity variable and each dimension of the SF-36 questionnaire, health care cost and age.
- Statistical tests were carried out to determine whether correlation coefficients were statistically significant at the 5% level.
- A high correlation coefficients was defined as  $\geq 0.4$ , and a low correlation coefficient was defined as  $\leq 0.2$ . (following Wahlqvist et al, 2002)
- Discriminative validity was examined by comparing WPAI-scores among individuals with different disease severity.

## RESULTS

### WPAI-variables

On average, the employed asthmatics with data on medication use (n=785) reported:

- 2.4% of their time absent from work due to asthma symptoms,
- 10.1% reduction while working and
- 13.2% reduction while doing regular activities.

Unemployed asthmatics (n=397) reported:

- 22.5% reduction in productivity while performing regular activities due to asthma symptoms.

### SF-36

Figure 1 shows the results of the SF-36 questionnaire per domain in the asthmatics participating in the study (n=1272, including also asthmatics who did not report medication use) and the values in a Swedish general population.

- Compared to the general population, the asthmatics in this study showed slightly lower scores for all dimensions.

### Correlation coefficients

When the WPAI-variables for the *employed individuals* (n=875) were correlated with the SF-36 scores (Table 1) the former showed a higher correlation with:

- physical function,
- role physical,
- general health and with
- social function.

The higher correlation with the physical scores was expected, as asthma symptoms affect the individual physically.

- A low and non-significant correlation was seen between productivity loss and age in employed individuals.

In the *unemployed individuals* (n=397), there was:

- A higher correlation between all variables than in the employed, with the exception of health care use the previous month.
- A relatively high and significant correlation between productivity loss and age in the unemployed asthmatics.

Overall, the results indicates that the convergent validity of the WPAI-asthma is high.

### Results based on disease severity

WPAI- results for employed and unemployed asthmatics, divided into different disease severity, are presented in Figure 2.

A higher score indicates greater productivity impairment.

- The more severe patients reported a higher reduction in productivity than did the mild and moderate ones.
- There was a statistically significant difference in WPAI-asthma scores between the intermittent-to-mild asthmatics and the moderate-to-severe asthmatics, as between the mild-to-moderate asthmatics and the moderate-to-severe asthmatics.

The -WPAI-asthma therefore seem to be able to discriminate between asthmatics with different disease severity.

Figure 1. SF-36 scores in the study population and in a Swedish general population

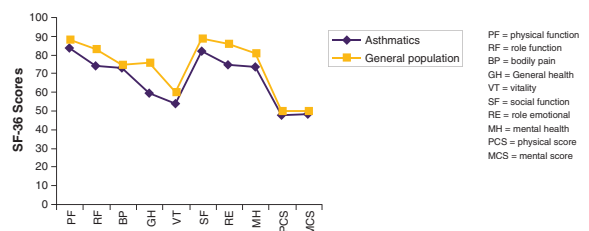
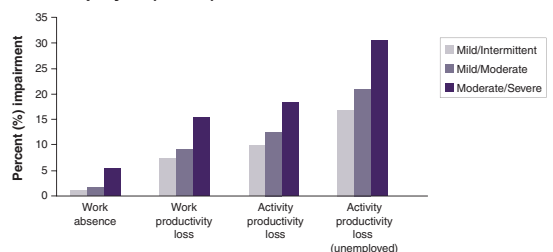


Table 1. Correlation between WPAI-variables and SF-36 scores

	Absence from work due to asthma	Productivity loss at work due to asthma	Productivity loss in regular activities due to asthma	Productivity loss in unemployed due to asthma
Physical* function	-0.30	-0.52	-0.51	-0.56
Role physical*	-0.36	-0.53	-0.58	-0.55
Bodily pain*	-0.21	-0.38	-0.37	-0.44
General health*	-0.27	-0.45	-0.50	-0.55
Vitality*	-0.22	-0.31	-0.41	-0.46
Social function*	-0.30	-0.41	-0.47	-0.45
Role emotional*	-0.24	-0.36	-0.38	-0.36
Mental health*	-0.15	-0.29	-0.32	-0.31
PCS*	-0.32	-0.52	-0.54	-0.59
MCS*	-0.19	-0.29	-0.34	-0.30
Health care use previous month*	0.26	0.28	0.20	0.22
Age	0.02 p=0.47	-0.04 p=0.26	-0.01 p=0.76	0.38 p<0.0001

\*All correlation coefficients were statistically significant (p<0.0001)

Figure 2. Productivity loss (%) due to asthma in employed (n=785) and unemployed (n=397) asthmatics



## CONCLUSION

- The results indicate that the WPAI-asthma is a valid instrument for measuring productivity losses due to asthma.

## REFERENCES

Wahlqvist P, Carlsson J, Ståhlhammar N-O, Wiklund I. Validity of the work productivity and activity impairment questionnaire for patients with symptoms of gastro-esophageal reflux disease (WPAI-GERD)- results from a cross-sectional study. *Value in health*, 2002; 5(2):104-111.