Application Thai save Thai
(Effectiveness of COVID-19 Self-Risk Assessment Tool for Infection Prevention among Working-Age Population)

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Background:

Given the ongoing impact of the COVID-19 pandemic, self-risk assessment tools are crucial for individuals, particularly the working-age group, to evaluate their infection risk. There is a lack of such tools as of early.

Objective:

To develop and evaluate the effectiveness of the self-assessment test application named Thai Save Thai (TST) for determining individuals' risk level of COVID-19 infection before entering premises.

Materials and Methods:

The present research consisted of two phases between April 2021 and July 2022. In the first phase, factory workers from all regions of the country were recruited using population allocation sampling. TST was used for self-assessment three times within two-week period to determine risk levels. The second phase evaluated the sensitivity, specificity and predictive value of TST among 320 subjects underwent reverse transcription polymerase chain reaction (RT-PCR) testing.

Result

Table 1. COVID risk assessment via TST application between April and July 2021

TST assessment	Risk level					Total (%)	Volunteers (n)
	Normal (%)	Low risk (%)	High risk (%)	Very high risk (%)	Infection (%)		
1st	44.35	54.29	0.22	1.10	0.04	100	4,870
2nd	38.84	60.77	0.03	0.36	0	100	4,400
3rd	29.17	70.45	0.10	0.20	0.0	100	3,818
Total	38.07	61.18	0.12	0.60	0.02	100	13,088

TST=Thai Save Thai

TST showed varying percentages for each risk level: normal, 44.4%, 38.8%, 29.2%; low, 54.3%, 60.8%, 70.5%; high, 0.2%, 0.02%, 0.1%; very high, 1.1%, 0.36%, 0.21%; and infection results, 0.02%, 0%, 0.05%.

Social Distancing

2m

Result

Table 3. Analysis of predictive value in comparison between results of TST and RT-PCR (n=320)

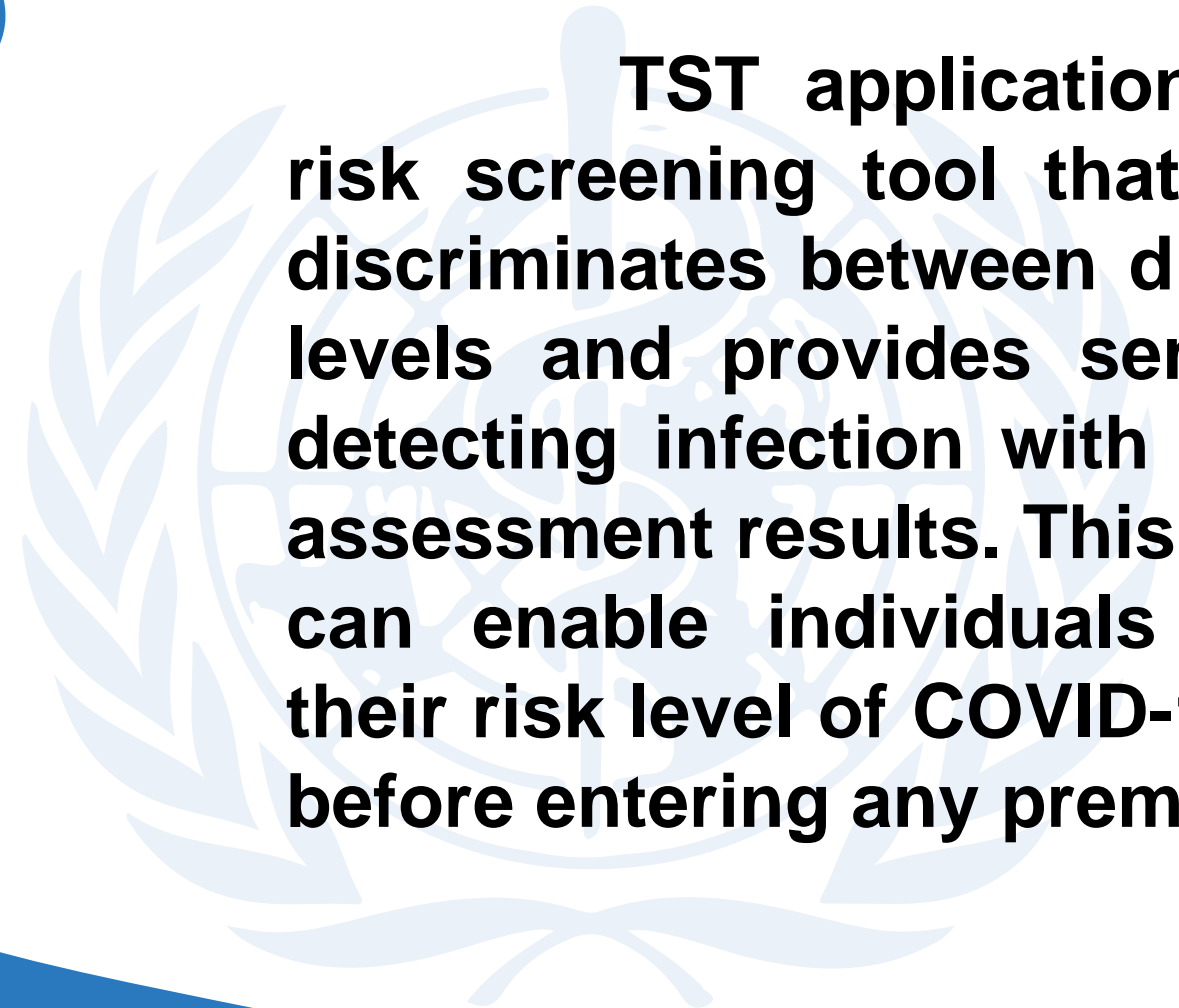| TST results	Sensitivity (95% CI)	Specificity (95% CI)	PPV (95% CI)	NPV (95% CI)
Low risk	90.0% (71.4 to 109.0)	27.1% (19.8 to 34.3)	7.9% (2.9 to 12.8)	97.5% (92.7 to 102.3)
High risk	75.0% (32.6 to 117.0)	28.1% (20.6 to 35.5)	2.9% (−0.3 to 6.2)	97.5% (92.7 to 102.3)
Very high risk	85.7% (59.8 to 111.6)	63.9% (51.9 to 76.0)	21.4% (6.2 to 36.6)	97.5% (92.7 to 102.3)
Infection	95.7% (87.3 to 104.0)	75.0% (63.2 to 86.8)	62.9% (46.8 to 78.9)	97.5% (92.7 to 102.3)

TST=Thai Save Thai; PPV=positive predictive value; NPV=negative predictive value; CI=confidence interval

TST indicated a sensitivity of 95.7% (95% CI 87.3 to 104.0), a specificity of 75.0% (95% CI 63.2 to 86.8) for detecting infection. Sensitivity for very high-risk level was 85.7% (95% CI 59.8 to 111.6) with 63.9% specificity (95% CI 51.9 to 76.0). The high-risk level had a sensitivity of 75% (95% CI 32.6 to 117) with specificity of 28.1% (95% CI 20.6 to 35.5), while the low-risk level had sensitivity of 90% (95% CI 71.4 to 109.0) with specificity of 27.1% (95% CI 19.8 to 34.3). The negative predictive value (NPV) were the same value as 97.5% at all results.

Conclusion

TST application is a self-risk screening tool that effectively discriminates between different risk levels and provides sensitivity for detecting infection with NPV for all assessment results. This application can enable individuals to assess their risk level of COVID-19 infection before entering any premises.

THANK YOU