Received: 8 October 2024 | Accepted: 13 August 2025

DOI: 10.1111/jdv.70029

JEADV JOURNAL OF THE EUROPEAN ACADEMY OF DERMATOLOGY & VENEREOLOGY

LETTER TO THE EDITOR

Time-tested impact of the TADA-Inspired Decision Algorithm on skin cancer diagnosis in primary care

Dear Editor,

The growing incidence of skin cancer, especially in fair-skinned populations, highlights the essential role of general practitioners (GPs) in early detection.[1] Dermoscopy, a non-invasive diagnostic tool, can significantly aid in the triage of suspicious skin lesions, provided that GPs receive adequate training.[2] The TADA-Inspired Decision Algorithm (TIDA) was recently developed to offer a practical approach for GPs,[3] based on the established Triage Amalgamated Dermoscopic Algorithm.[4] In a previous randomized non-inferiority trial, the beneficial skills acquired by GPs in triaging suspicious skin lesions after a 4-hour TIDA training programme were demonstrated in an online academic setting.[5]

In this spin-off, we conducted a prospective interventional study to assess short- and long-term changes in real-life skin cancer diagnostic practices among GPs after completing the online TIDA training program. A total of 87 French-speaking GPs from Belgium and Luxembourg participated in the training and completed questionnaires assessing their diagnostic behaviours before (T0), immediately after (T1), and one year after training (T2). McNemar's test with Bonferroni correction was used to assess changes over time. Fisher's exact test examined associations between categorical variables. All tests were considered significant for p value <0.05.

At T1, the majority of GPs (96.6%) reported improved comfort managing suspicious lesions ($p < 0.001$), with 95.4% who maintained this confidence at T2 (Table 1). Similarly, training also led to increased confidence in interpreting dermoscopic images of skin tumours. However, one year later, there was a significant decline in the frequency of incidental detections, referrals and biopsies, and confidence in dermoscopic interpretation ($p < 0.001$).

Socio-demographic factors influenced these outcomes. In the long term, trainees reported greater confidence in their dermoscopy skills and in mastering clinical and dermoscopic photography, leading to higher rates of referral and biopsy compared to their senior counterparts (Table 2). In contrast, established GPs incidentally discovered more suspicious lesions, showing greater awareness of the importance of early skin cancer detection. Additionally, GPs with over 10 years of experience diagnosed more carcinomas, suggesting that clinical experience may enhance diagnostic accuracy, particularly for non-melanoma skin cancer.

Although initial training significantly improved GPs' confidence and awareness, its impact on sustained behavioural change was limited. This aligns with previous literature indicating that training effects tend to diminish within six months if not reinforced.[6] To maintain long-term retention, interactive, scenario-based spaced refreshers at least every six months have been recommended.[5,7,8] AI-based e-learning may be particularly effective for younger practitioners,[9] while face-to-face or teledermoscopy-based sessions may better suit older GPs, especially when adapted to their technological familiarity.

This study has several methodological limitations. First, self-reported data collected through an online survey may not reliably reflect actual clinical behaviour. Nonetheless, given the wide geographic distribution of participating GPs, a questionnaire-based approach represented the most feasible practical method for this initial investigation. Second, the assessment of diagnostic self-confidence is inherently subjective and may not directly correlate with appropriate clinical decision-making. Further studies would benefit from analysing real-world clinical data, such as patient charts, to more accurately assess the GPs' diagnostic performance. Integrating objective clinical data from medical records would strengthen the evaluation of the TIDA training program by providing a more precise measure of its real-world impact.

This study highlights that GPs are increasingly aware of the importance of skin cancer screening and are actively seeking training in the use of accurate diagnostic tools. The TIDA training represents a promising approach to improve GPs' ability to triage skin tumours effectively. Nonetheless, sustaining this improvement requires age-adapted, continuous spaced education strategies to counter skill decline. As skin cancer rates rise and access to dermatologists remains limited, empowering primary care with enduring diagnostic competence is an urgent public health priority.

TABLE 1 Short- and long-term evolution of the GPs' diagnostic practices for malignant skin tumours.

Gps' skin tumour diagnostic practices	Pre-test (T0), *N* = 87		Short-term (T1), *N* = 87			Long-term (T2), *N* = 87		
	n (%)	95% CI	*n* (%)	95% CI	*p* value	*n* (%)	95% CI	*p* value
Frequency of patients seeking medical advice for a suspicious skin lesion as *primary (main)* reason for consultation					0.344			0.892
Missing	*1 (1.1)*	*[0.0; 3.4]*	*0 (0.0)*	*[0.0; 0.0]*		*0 (0.0)*	*[0.0; 0.0]*	
≤1×/month	72 (82.8)	[74.8; 90.7]	63 (72.4)	[63.0; 81.8]		55 (63.2)	[53.3; 73.1]	
1×/week to 1×/month	13 (14.9)	[7.5; 22.4]	19 (21.8)	[13.2; 30.5]		27 (31.0)	[21.5; 40.5]	
≥1×/week	1 (1.1)	[0.0; 3.4]	5 (5.7)	[0.9; 10.6]		5 (5.7)	[1.0; 10.5]	
Frequency of patients seeking medical advice for a suspicious skin lesion as *secondary* reason for consultation					0.144			0.999
Missing	*0 (0.0)*	*[0.0; 0.0]*	*1 (1.1)*	*[0.0; 3.4]*		*0 (0.0)*	*[0.0; 0.0]*	
≤1×/month	45 (51.7)	[41.2; 62.2]	30 (34.5)	[24.5; 44.5]		32 (36.8)	[26.9; 46.7]	
1×/week to 1×/month	29 (33.3)	[23.4; 43.2]	42 (48.3)	[37.8; 58.8]		39 (44.8)	[34.6; 55.0]	
≥1×/week	13 (14.9)	[7.5; 22.4]	14 (16.1)	[8.4; 23.8]		16 (18.4)	[10.4; 26.4]	
Frequency of *incidentally* discovered suspicious skin lesions					*0.006**			*0.037**
Missing	*0 (0.0)*	*[0.0; 0.0]*	*1 (1.1)*	*[0.0; 3.4]*		*1 (1.1)*	*[0.0; 3.3]*	
≤1×/month	58 (66.7)	[56.8; 76.6]	46 (52.9)	[42.4; 63.4]		56 (64.4)	[54.5; 74.2]	
1×/week to 1×/month	27 (31.0)	[21.3; 40.8]	23 (26.4)	[17.2; 35.7]		24 (27.6)	[18.4; 36.8]	
≥1×/week	2 (2.3)	[0.0; 5.4]	17 (19.5)	[11.2; 27.9]		6 (6.9)	[1.7; 12.1]	
Frequency of whole-body skin examinations performed					0.169			0.153
≤1×/month	70 (80.5)	[72.1; 88.8]	59 (67.8)	[58.0; 77.6]		71 (81.6)	[73.6; 89.6]	
1×/week to 1×/month	15 (17.2)	[9.3; 25.2]	21 (24.1)	[15.1; 33.1]		13 (14.9)	[7.6; 22.3]	
≥1×/week	2 (2.3)	[0.0; 5.4]	7 (8.0)	[2.3; 13.8]		3 (3.4)	[0.0; 7.2]	
In my practice, when confronted with a suspicious skin lesion, I feel					*<0.001**			0.999
Always/often uneasy	81 (93.1)	[87.8; 98.4]	3 (3.4)	[0.0; 7.3]		4 (4.6)	[0.3; 8.9]	
Sometimes uneasy	2 (2.3)	[0.0; 5.4]	36 (41.4)	[31.0; 51.7]		34 (39.1)	[29.1; 49.1]	
Always/often confident	4 (4.6)	[0.2; 9.0]	48 (55.2)	[44.7; 65.6]		49 (56.3)	[46.1; 66.5]	
In my practice, when faced with a dermoscopic image, I feel					*<0.001**			*<0.001**
Missing	*0 (0.0)*	*[0.0; 0.0]*	*0 (0.0)*	*[0.0; 0.0]*		*1 (1.1)*	*[0.0; 3.3]*	
Always/often uneasy	64 (73.6)	[64.3; 82.8]	1 (1.1)	[0.0; 3.4]		11 (12.6)	[5.8; 19.5]	
Sometimes uneasy	22 (25.3)	[16.2; 34.4]	19 (21.8)	[13.2; 30.5]		56 (64.4)	[54.5; 74.2]	
Always/often confident	1 (1.1)	[0.0; 3.4]	67 (77.0)	[68.2; 85.9]		19 (21.8)	[13.4; 30.3]	
Referral to the dermatologist or biopsy/excision performed in the last year					0.340			*0.046**
≤1×/month	67 (77.0)	[68.2; 85.9]	59 (67.8)	[58.0; 77.6]		71 (81.6)	[73.6; 89.6]	
1×/week to 1×/month	19 (21.8)	[13.2; 30.5]	23 (26.4)	[17.2; 35.7]		15 (17.2)	[9.5; 25.0]	
≥1×/week	1 (1.1)	[0.0; 3.4]	5 (5.7)	[0.9; 10.6]		1 (1.1)	[0.0; 3.3]	
Number of carcinomas personally diagnosed in the last year					0.386			*<0.001**
0–1 carcinoma	55 (63.2)	[53.1; 73.4]	54 (62.1)	[51.9; 72.3]		30 (34.5)	[24.7; 44.2]	
2–5 carcinomas	30 (34.5)	[24.5; 44.5]	26 (29.9)	[20.3; 39.5]		41 (47.1)	[36.9; 57.4]	
>5 carcinomas	2 (2.3)	[0.0; 5.4]	7 (8.0)	[2.3; 13.8]		16 (18.4)	[10.4; 26.4]	
Number of melanomas personally diagnosed in the last year					0.852			0.396
0 melanoma	68 (78.2)	[69.5; 86.8]	67 (77.0)	[68.2; 85.9]		52 (59.8)	[49.5; 70.1]	
1–2 melanomas	19 (21.8)	[13.2; 30.5]	20 (23.0)	[14.1; 31.8]		33 (37.9)	[27.7; 48.1]	
>2 melanomas	0 (0.0)	[0.0; 0.0]	0 (0.0)	[0.0; 0.0]		2 (2.3)	[0.0; 5.4]	

Abbreviations: 95% CI, 95% confidence interval; GPs, general practitioners;

*Statistically significant *p* values <0.05.

TABLE 2 Significant long-term diagnostic practices related to the GPs' socio-demographic background.

Gps' skin tumour diagnostic practice[a]	Socio-demographic background				*p* value
When confronted with a suspicious skin lesion, I feel					
	Age				
	25–35 y ***n*** **= 56**	**36–45 y** ***n*** **= 17**	**46–55 y** ***N*** **= 11**	**Over 56 y** ***n*** **= 3**	
Decline in practice	7 (12.5%)	7 (41.2%)	3 (27.3%)	0 (0.0%)	0.041*
No practice change	40 (71.4%)	7 (41.2%)	4 (36.4%)	2 (66.7%)	
Increase in practice	9 (16.1%)	3 (17.6%)	4 (36.4%)	1 (33.3%)	
When faced with a dermoscopic image, I feel					
	Years of practice				
	<3 y ***n*** **= 24**	**3–10 y** ***n*** **= 36**	**10–20 y** ***n*** **= 18**	**>20 y** ***n*** **= 9**	
Missing	*0 (0.0%)*	*1 (2.8%)*	*0 (0.0%)*	*0 (0.0%)*	0.009*
Decline in practice	11 (45.8%)	24 (66.7%)	16 (88.9%)	3 (33.3%)	
No practice change	12 (50.0%)	10 (27.8%)	2 (11.1%)	4 (44.4%)	
Increase in practice	1 (4.2%)	1 (2.8%)	0 (0.0%)	2 (22.2%)	
When taking clinical and dermoscopic photographs of skin lesions, I feel					
	Years of practice				
	<3 y ***n*** **= 24**	**3–10 y** ***n*** **= 36**	**10–20 y** ***n*** **= 18**	**>20 y** ***n*** **= 9**	
Missing	*0 (0.0%)*	*1 (2.8%)*	*0 (0.0%)*	*0 (0.0%)*	0.008*
Always/often uneasy	4 (16.7%)	3 (8.3%)	3 (16.7%)	1 (11.1%)	
Sometimes uneasy	9 (37.5%)	28 (77.8%)	14 (77.8%)	5 (55.6%)	
Always/often confident	11 (45.8%)	4 (11.1%)	1 (5.6%)	3 (33.3%)	
Number of carcinomas personally diagnosed during training					
	Years of practice				
	<3 y ***n*** **= 24**	**3–10 y** ***n*** **= 36**	**10–20 y** ***n*** **= 18**	**>20 y** ***n*** **= 9**	
0–1 carcinoma	11 (45.8%)	17 (47.2%)	1 (5.6%)	1 (11.1%)	0.047*
2–5 carcinomas	10 (41.7%)	15 (41.7%)	11 (61.1%)	5 (55.6%)	
>5 carcinomas	3 (12.5%)	4 (11.1%)	6 (33.3%)	3 (33.3%)	
Frequency of incidentally discovered suspicious skin lesions					
	Professional status				
	GP trainees ***n*** **= 27**		**GPs** ***n*** **= 60**		
Missing	*0 (0.0%)*		*1 (1.7%)*		0.007*
≤1×/month	22 (81.5%)		34 (56.7%)		
1×/week to 1×/month	2 (7.4%)		22 (36.7%)		
≥1×/week	3 (11.1%)		3 (5.0%)		
Referral to dermatologist or biopsy/excision performed in the year after training					
	Professional status				
	GP trainees ***n*** **= 27**		**GPs** ***n*** **= 60**		
Decline in practice	6 (22.2%)		30 (50.0%)		0.041*
No practice change	15 (55.6%)		23 (38.3%)		
Increase in practice	6 (22.2%)		7 (11.7%)		

Abbreviation: GPs, general practitioners.

[a]The reported changes reflect the primary significant correlations observed between the socio-demographic characteristics of the study population and the evaluated aspects of the GPs' skin tumour diagnostic practices.

*Statistically significant *p* values <0.05;

KEYWORDS
continuing medical education, dermoscopy, early diagnosis, general practitioners, skin cancer, TIDA

ACKNOWLEDGEMENTS
The authors would like to thank all the general practitioners and general practice trainees that kindly participated in this study. We also thank Dr. Mariana Andrade, M.D., who provided editorial assistance.

FUNDING INFORMATION
FNRS Grant entitled Post-doctorate Clinical Master Specialist (SPD).

CONFLICT OF INTEREST STATEMENT
None.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICAL APPROVAL
The study received ethical approval from the ethics committee of the Cliniques universitaires Saint-Luc (CUSL) in Brussels, Belgium.

ETHICS STATEMENT
All participating physicians in this manuscript provided written informed consent to publication of their data.

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