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Soothing with one's words: Positive doctor-patient communication modulates post-surgery pain and quality of physical activity in patients undergoing nail surgery

Running Head: Doctor-patient communication modulates post-surgery pain and HrQoL

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Dear Editor,

Research on integrated approaches in dermatologic care has amply demonstrated the importance of centering on patients' individual traits and needs to improve clinical outcomes¹⁻³. However, little attention has been placed on the role of interpersonal factors in ameliorating the dermatologic patient experience. A positive physician-patient communication and relationship may increase patient's satisfaction with care and enhance treatment compliance⁴. Providing clear information about treatment options and thorough explanations of surgical procedures allows patients to formulate more realistic expectations, which may in turn positively influence post-surgery outcomes². While it has been shown that the words physicians use and the relationship they build with patients can soothe treatment-related anxiety and perception of pain^{4,5}, up to date no study has examined whether a positive physician-patient communication modulates pain and quality of life in nail patients after surgery. To address this issue and examine the role of patient's expectations about treatment in this relationship, we conducted a prospective monocentric cohort study in the Dermatology Unit of Sant'Orsola-Malpighi Hospital, University of Bologna, from April to December 2019, involving 100 patients (54 females, ages 18-71 years), candidates for nail surgery. A pre-surgery dermatologic consultation was conducted in the clinic (Time 1) where the physician explained the surgical procedure together with risks and benefits involved and what patients should expect after surgery. At this time, demographic and clinical data was collected, together with patient's expectations about the treatment (through the Stanford Expectations of Treatment Scale, SETS)⁶ and patient's satisfaction with the communication and the relationship with the physician (through an adapted Communication with Radiotherapist Short Form, CORT-S⁷ scale). At one month after surgery (Time 2), a follow-up visit was conducted by the same clinician who also performed the surgery, and patients' health related quality of life and experience of pain were assessed through the Short Form-36 (SF-36)⁸ and the Brief Pain Inventory–Short Form (BPI-SF)⁹ respectively.

Descriptive analyses and ANOVAs computed to characterize the sample revealed no significant differences for gender, lesion site, lesion type and intervention performed in terms of

post-surgery outcomes, treatment expectations and satisfaction with physician's communication (see Table 1). To investigate the relationship between satisfaction with physician-patient communication (independent variable) and post-surgery pain and quality of life measures (dependent variables), under the influence of patient's (positive and negative) expectations about the treatment (mediator variable), we performed a series of multiple mediation analysis (with 10000 accelerated bootstrap sampling and bias-corrected confidence intervals). Analysis performed on post-surgery quality of life yielded significant results only for the subscale of physical activity and for positive expectations as a mediator ($R^2 = 0.25$; $MSE = 4.053$; $F_{2, 97} = 24.723$, $p < 0.0001$). That is, the higher the satisfaction with the communication and relationship with the dermatologist, the better the quality of physical activity reported after surgery, and this effect was mediated by patient's positive expectations about treatment (see Figure 1.a). The same analysis conducted with post-surgery pain as dependent variable was also significant ($R^2 = 0.33$; $MSE = 4.932$; $F_{2, 97} = 24.723$, $p < 0.0001$): The more satisfied patients were with physician's communication, the lower the level of maximum pain experienced after surgery. Patient's expectations about treatment appeared to have a negligible role in mediating these effects (see Figure 1.b). Taken altogether, these findings suggest that the more positive the communication and relationship with the dermatologist, the lower the pain experienced after surgery and the better the quality of physical activity reported by patients, and this effect is partly mediated by patient's positive expectations about treatment. Our results might be limited by the relatively small sample size and the fact we measured post-surgery outcomes at one timepoint only. Notwithstanding these limitations, this is the first study to suggest that a positive doctor-patient communication has a soothing effect on nail surgery patients' experience of pain and physical discomfort, which extends well beyond the peri-operative treatment period, to modulate pain and quality of physical activity even one month after surgery. Our findings highlight the need to further enhance communication and interaction skills in both current and prospective clinicians¹⁰ through targeted training programs.

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Table 1Demographic and clinical characteristics of the entire sample ($n = 100$)

	<i>N (%)</i>
Gender	
Females	54 (54)
Males	46 (46)
Age (years), mean (median) min-max	42 (42.5) 18–71
Education	
Elementary	15 (15)
High school	50 (50)
Graduate	35 (35)
Civil status	
Single	36 (36)
Married/in relationship	44 (44)
Divorced/separated	20 (20)
Clinical characteristics	
Squamous cell carcinoma	6 (6)
Melanoma in situ	2 (2)
Onychomatricoma	8 (8)
Exostosis	8 (8)
Fibromyxoma	3 (3)
Glomic tumour	4 (4)
Onychopapilloma	7 (7)
Fibrokeratoma	2 (2)
Periungual warts	3 (3)
Benign melanonychia	1 (1)
Lichen Ruber Planus	4 (4)
Psoriasis	3 (3)
Ingrown nail	44 (44)
Retronychchia	2 (2)
Pincer nails	3 (3)
Type of lesion	
Malignant	8 (8)
Benign	92 (92)
Lesion site	
Hand	26 (26)
Foot	74 (74)
Type of intervention*	
Greatly invasive	44 (44)
Mildly invasive	56 (56)
Complications**	2 (2)
Pre-surgery PROM-s	Mean [95% CI]
Satisfaction with the communication with the physician (CORT-S)	51 [50.1, 51.9]
Positive expectancies (SETS)	18.5 [17.9, 19.1]
Negative expectancies (SETS)	9.7 [8, 10]
Post-surgery PROM-s	
Health-related quality of life (SF36)	

Physical activity	26.3 [25.8, 26.8]
Physical health	5.9 [5.57, 6.23]
Bodily pain	7.7 [7.6, 7.8]
General health	19.4 [18.9, 19.9]
Vitality	16.8 [16.3, 17.3]
Social activity	7.3 [6.97, 7.63]
Emotional problems	4.6 [4.42, 4.78]
Mental health	22.3 [21.8, 22.8]
Pain Experienced (BPI)	
Worst pain	5.4 [4.89, 5.91]
Least pain	3.5 [2.99, 4.01]
Average pain	4.0 [3.49, 4.51]
Current pain	3.8 [3.27, 4.33]
Pain severity	4.2 [3.71, 4.69]
Interference with activity	3.2 [2.89, 3.51]
Interference with mood	2.9 [2.57, 3.23]
Interference with practical ability	3.2 [2.87, 3.53]
Interference with sleep	3.8 [3.21, 4.39]

Abbreviations: SF36: Health related quality of life measured by the Short Form-36; BPI: The Brief Pain Inventory; SETS: Stanford Expectations of Treatment Scale.

* Type of Interventions performed included greatly and mildly invasive procedures as follows.

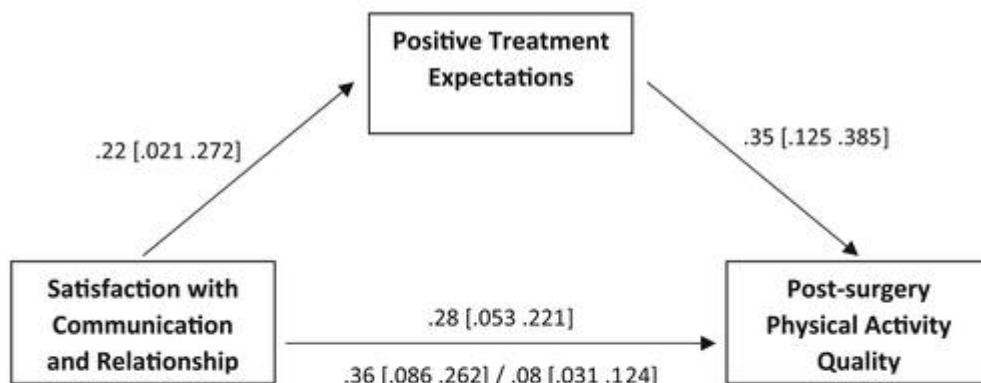
Greatly invasive procedures included: Nail apparatus removal; Lateral longitudinal excision; Tangential excision of nail matrix tumor; Elliptic longitudinal excision. Mildly invasive procedures involved: Punch biopsy of the nail bed and matrix; Sodium hydroxide chemical matricectomies for ingrowing nail/pincer nail; Nail plate avulsion.

** Complications involved post-surgery bacterial infections which were evidenced in 2 patients who underwent complete removal of the nail apparatus for squamous cell carcinoma of the first toe. Both patients were administered systemic antibiotic therapy with amoxicillin plus clavulanic acid, with complete resolution of infection within 4 weeks of intervention.

Figure 1

Higher satisfaction with the communication and relationship with the physician is associated with a better quality of physical activity (a) and with lower levels of maximum pain (b) reported at 1 month after surgery, and this relationship is in part mediated by patient's positive expectations about treatment. Standardized coefficients with associated 95% confidence intervals [in brackets] are provided for direct effects (above arrow line) as well as for total / indirect effects (below arrow line).

(a)



(b)

