

# **Cancer-related Symptoms as Mediators between Treatment and Functional Capacity** in Adolescents and Young Adults (AYAs) with Cancer

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## Background

- Adolescents and young adults (AYA) typically refer to indiv between the age of 15 and 39 years old.
- The functional capacity of AYA patients with cancer are of physical and psychosocial complications throughout the c continuum.
- Although studies in Western countries have demonstrated health and psychosocial functioning in AYA patients, these not be generalizable to the Asian population due to ethno differences.

# Objectives

- To identify clinical and treatment risk factors of functional among Chinese AYA cancer patients in Hong Kong.
- To examine the mediatory effects of cancer-related sympt cancer/treatment characteristics and functional capacity

# Methods

- This cross-sectional, multi-centered study was conducted academic public hospitals in Hong Kong – the Prince of Wa and the Hong Kong Children's Hospital.
- Study population:
- Inclusion criteria: Patients who were diagnosed with ca 15 and 39 years old
- Exclusion criteria: Pre-existing conditions associated wire disorders, undergoing end-of-life treatment
- Study outcomes:
  - Functional capacity in performing school/work and hou (Life Functioning Questionnaire)
- Predictive factors/covariates:
  - Treatment-related physical symptoms (Rotterdam Sym Checklist)
  - Cognitive symptoms (CCSS-Neurocognitive Questionna
  - Psychological symptoms (*Brief Symptom Invnetory-18*)
  - Clinical and treatment characteristics (*Medical records*
- Socioeconomic factors (*Structured questionnaire*)
- Statistical analysis:
- General linear models to identify factors associated with functional capacity, adjusted for age, sex and cancer diagnosis
- Structural equation modeling to to identify potential mediators between cancer/treatment factors and functional capacity

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Results

viduals who are	<ul> <li>This study recruited 200 AYA patients wit 98.0%) (Table 1)</li> </ul>				
ften affected by	Table 1: Clinical Characteristics				
cancer care	Age (Mean [SD]) years				
d compromised	Sex				
e results may	Male				
ocultural	Female				
	Diagnosis Homotological malignancy				
	Hematological malignancy Sarcoma				
l capacity	Breast cancer				
	Gonadal tumor				
toms between	Other solid tumor				
	Treatment modalities				
	Chemotherapy Radiation therapy				
	Surgery				
at two ales Hospital	Immunotherapy				
	Targeted therapy				
ancer between	<ul> <li>A substantial proportion of AYA patients</li> <li>impairment accordially in the domain of</li> </ul>				
ith cognitive	impairment, especially in the domain of				
ith cognitive	Figure 1: Proportion of AYA Patier				
	Impairment				
me activities	S Home function 475				
	Home function 47.5				
ptom	Leisure with friends 46.5				
	Ŭ				
nire)	Work function 41.5				
	Work function 41.5				
	Leisure with family 36.5				
	0% 10% 20% 30% 40% 5				

% of su

Impaired Not impaired Not in

Functional impairment refers to patients who reported of "Leisure with Friend" and "Leisure in Family", or >4 pc Function" and "Work Function" of the Life Functioning (

th cancer (response rate:	Table 2: Factors ass	Table 2: Factors associated with impaired work functioning			
n=200 (%)		Unstandardized coefficient (B)	Standard error	p-value	
33.1 [7.1]	Chemotherapy treatment	1.00	0.36	0.007	
	Physical symptoms	0.09	0.03	<0.001	
83 (41.5)	Depression symptoms	0.27	0.09	0.003	
117 (58.5)	Anxiety symptoms	0.22	0.08	0.005	
67 (33.5)	Cognitive symptoms	0.22	0.10	0.032	
27 (13.5) 34 (17.0) 19 (9.5) 53 (26.5)	<ul> <li>The mediation analysis showed that physical symptoms and psychological symptoms might mediate the effect of chemotherapy and impaired work function (Figure 2).</li> </ul>				
156 (78.0)	Figure 2: Mediation models $\underline{B} = 1.01$ p = 0.007	<u>Mediator</u> Physical symptoms	<u>ß</u> = 0.09 p < 0.001		
69 (34.5) 62 (21.5)		Indirect effect (p<0.001)			
63 (31.5) 17 (8.5) 77 (38.5)	Independent variable Chemotherapy	Direct effect	Dependent Work fu impair	nction	
reported functional home functioning (Figure 1) nts with Functional	$ \begin{split} & \overset{R}{=} 0.52 \\ & p = 0.004 \end{split} \end{split} \\ \\ & \underbrace{ Independent variable} \\ & \underbrace{ Chemotherapy} \end{split} \end{split}$	p = 0.016 <u>Mediator</u> Psychological symptoms Indirect effect (p=0.004) <u>Direct effect</u>	B = 0.10 p =0.001 ■ Dependent va Work fund impairm	ction	
53.5		<u>ß</u> = 1.05 p = 0.016			
50% 60% 70% 80% 90% 100% 50% 60% 70% 80% 90% 100% subject impaired A a score of >3 points in the domains points in the domains of "Home Questionnaire.	<ul> <li>AYA patients reported significant challenges to their functioning at home, school, and workplace.</li> <li>Cancer-related symptoms is a potential mediator between cancer treatment and functional limitations.</li> <li>This finding emphasizes the importance of symptom management and supportive care during the cancer care continuum.</li> <li>Corresponding author: Prof. Yin Ting Cheung, Email: <u>vinting.cheung@cuhk.edu.hk</u> All authors have no conflict of interest to declare.</li> <li>Funded by the Food and Health Bureau, The Government of the HKSAR. Health and Medical Research Fund (Ref 09202846)</li> </ul>				

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### Results

