Supplementary File 1

Survey of Attitudes, Knowledge and Competence Related to Genetics and Genomics in Nursing Practices

Dear Registered Nurse:

You are invited to take a survey that will evaluate primary issues in genetics and genomics. As the front line of care, nurses have a central role in seeing that genetic and genomic discoveries lead to disease prevention and population health improvements. We will evaluate a general assessment of your knowledge. Knowing your baseline knowledge will help you determine your learning needs.

Before choosing to participate, please consider that:

• You have been invited to complete this survey because you are a registered nurse. Questions in the survey relate to your current practices, knowledge and opinions about implications of genetic and genomic medicine for preventing and treating common diseases such as cancer, diabetes and heart disease.

• The survey will take about 15-20 minutes to complete.

• Your participation in this survey is completely voluntary and you can choose to skip any questions that you do not wish to answer.

• There are no risks, penalties, or costs to your participation. There are no direct benefits to your participation other than contributing to research.

• Many of the questions relate to your attitudes about genetics and genomics for which there are no right or wrong answers.

• All information you provide is anonymous.

I have read this informed consent form to know the purpose and process of the study, and I have volunteered to participate in this study.

○ Agree ○ Disagree

Instruction to filling the questionnaire:

1. The data collected in this questionnaire is only used for a research study. We will keep your information confidential. Please fill it according to your actual situation.

2. Related concepts: ① genetics is a science that explores biological genetics and variation, and studies the structure, function, variation, transmission and expression rules of genes.② genomics is the science that explores the role of the whole genome in life activities at the holistic level.

Part 1: Socio-demographics and Work-related Information Questionnaire

1. What is your gender?

☐ Male

☐ Female

2. How old are you? (i.e. 30)

_____ years old

3. What is your China ethnicity?

☐ Han nationality

☐ Minority

4. What is your marital status?

☐ Not married

☐ Married

☐ Other

5. Which province is your hospital in?

☐ Beijing

☐ Shandong province

☐ Hunan province

☐ Guangxi Zhuang autonomous region

☐ Xinjiang Uygur autonomous region

6. What is the type of your hospital?

☐ General hospital

☐ Cancer hospital

7. Total number of years you have worked in Nursing: _____years

8. What is the **initial nursing degree** that you have you received?

☐ Diploma

☐ Associate Degree in nursing

☐ Bachelor's Degree in nursing

☐ Master's Degree in nursing

☐ Doctorate Degree in nursing

9. What is the **highest nursing degree** that you have you received?

☐ Diploma

☐ Associate Degree in nursing

☐ Bachelor's Degree in nursing

☐ Master's Degree in nursing

☐ Doctorate Degree in nursing

10. What is your nursing **professional title?**

☐ Junior title

☐ Intermediate title

☐ Senior title

11. What is your average monthly income ?

☐ ≤ 5,000 CNY

☐ 5,001–10,000 CNY

☐ > 10,000 CNY

12. Are you a member of the Chinese Nursing Association?

☐ Yes

☐ No

13. Are you a nursing researcher?

☐ Yes

☐ No

14. What percentage of your work-time is spent taking care of patients?

☐ ≤ 25%

☐ 26%–50%

☐ 51%–75%

☐ 76%-100%

Part 2：Genetics and Genomics in Nursing Practices Survey (GGNPS)

1. How important do you think it is for nurses to receive more education about genetics/genomics of common diseases?

a. Very important

b. A little important

c. Neutral/Not sure/Don't know

d. Not very important

e. Not important at all

2. Please indicate whether you think each of the following would be a **potential advantage** of integrating genetics/genomics of common diseases into your practice.

	No advantage	Advantage
Better treatment decisions (e.g. recommendations for clinical treatment options)		
Improved services to the patients		
Better adherence to clinical recommendations among patients		

3. Please indicate whether you think each of the following would be a **potential disadvantage** of integrating genetics of common diseases into your practice.

	No disadvantage	Disadvantage
Would take too much time working and studying		
Can't be reimbursed/cost too much		
Need to "retool" professionally (update knowledge and competence)		
Increase patient anxiety about risk		
Would increase insurance discrimination		

4. Each of the following statements relates to the genetics of common diseases and family history taking. By common diseases, we are referring to disorders that arise as a result of interactions between an individual's environment and his or her unique genetic makeup. Common diseases include diseases such as cancer, heart disease, and diabetes. Please indicate how confident you are that you can do each of the following:

	Not at all confident	Confident
Decide what family history information is needed to tell something about a patient's genetic susceptibility to common diseases.		
Discuss how family history affects recommended screening intervals.		
Decide which patients would benefit from a referral for genetic counseling and possible testing for susceptibility to common diseases.		
Access reliable and current information about genetics and		

genomics of common diseases.		
Give patients information about the **risks** of genetic testing for common diseases.		
Give patients information about the **benefits** of genetic testing for common diseases.		
Give patients information about the **limitations** of genetic testing for common diseases.		
Facilitate referrals for genetic services for common diseases.		

5. Please indicate whether you agree or disagree with the following statements.

	Agree	Disagree	Don't know
A family history that includes only 1st degree relatives such as parents, siblings, and children should be taken for every new patient.			
A family history that includes 2nd and 3rd degree relatives such as grandparents, aunts, uncles, and cousins should be taken for every new patient.			
Family history taking should be a key component of nursing care.			
There is a role for nurses in counseling patients about genetic risks.			

6. Are you actively taking care of patients?
   a. Yes
   b. No (If **NO** skip to **question 10**)
7. In the past three months, how often have you collected a complete family history from a patient that includes the following components: information on disorders from three generations, and age at diagnosis and death for each affected family member?
   a. Always
   b. Often
   c. Occasionally
   d. Rarely or never
8. In the past three months, has any patient initiated a discussion with you about genetics?
   a. Yes
   b. No

9. Thinking specifically about patients that you have seen **in the past three months,** please answer the following questions.

	Never	Rarely	Occasionally	Frequently
In the past 3 months, how often have you used family history information when facilitating clinical decisions or recommendations for your patients?				
In the past 3 months, how often have you facilitated referrals to genetic services?				

10. Do you think that genetic risk (e.g., as indicated by family history) has clinical relevance for the following:

	Not re	Somewhat	A Great Deal
Breast cancer			
Colon cancer			
Coronary heart disease			
Diabetes			
Ovarian cancer			

11. When patients indicate **a disorder in the family**, which of the following pieces of information do you collect in your standard family history assessment? Each family member's:

	Never (0)	sometimes (1)	always (2)
Age at diagnosis of condition			
Relationship to the patient			
Race or ethnic background			
Age at death from condition			
Both sides of the family (maternal/paternal)			

12. Thinking about how you support clinical decisions (such as administering drugs prescribed), how important do you think each of the following is to consider?

	Not at all	Essential	Don't know
Genetic test results			

Family history			

13.The following two questions are about human genetic variation. Please check the answer that indicates whether the statement is true, false or you do not know.

	True	False	Don't know
The DNA sequences of two randomly selected healthy individuals of the same sex are 90-95% identical.			
Most common diseases such as diabetes and heart disease are caused by a single gene variant.			

14. Some developed countries have incorporated the basic competences and curriculum guidelines for nurse genetics and genomics into one of the standards of nursing practice. Have you heard or read about these competences?

a. Yes

b. No

15.

	Excellent	Good	Poor
Please rate your understanding of the genetics of common diseases.			
In describing your genetic/genomic knowledge, would you consider it to be			

16. Learning more about genetics/genomics and its application to your professional practice:

	Yes	No
(1)Did your nursing curriculum include genetics/genomics content?		
(2)Since licensure, have you attended any courses that included genetics/genomics as a major component?		

	Yes	No	Don't know
(3)Do you plan to learn more about genetic/genomics ? Do you intend to learn more about genetics/genomics ?			
(4)Would you be able to attend genetics/genomics courses or training during work hours?			

(5)Would you attend genetics/genomics courses or training on your own time?			
(6)Do you think your senior staff members see genetics/genomics as an important part of **your** role?			
(7)Do you think your senior staff members see genetics/genomics as an important part of **their** role?			

THANK YOU FOR YOUR PARTICIPATION!