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Thyroid ultrasound survey in Yamanashi Prefecture and review of latent thyroid cancers

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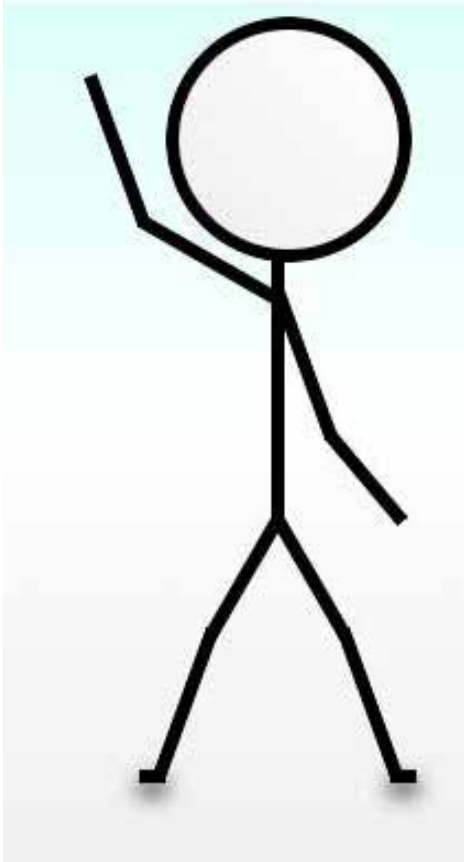


Mt. Fuji

Thyroid ultrasound survey in Yamanashi

- In Yamanashi Prefecture in Japan, thyroid ultrasound survey has been performed for adult participants of Ningen Dock, a comprehensive health checkup, for several decades.
- We analyzed the results of thyroid ultrasound survey for 21856 participants between 2004 and 2009.
40952 of ultrasound examination was done in this period.
- Thyroid nodules and cysts more than 3.0 mm of diameter, as well as diffuse thyroid disorders, were identified.

Ningen Dock



Ningen = Human being

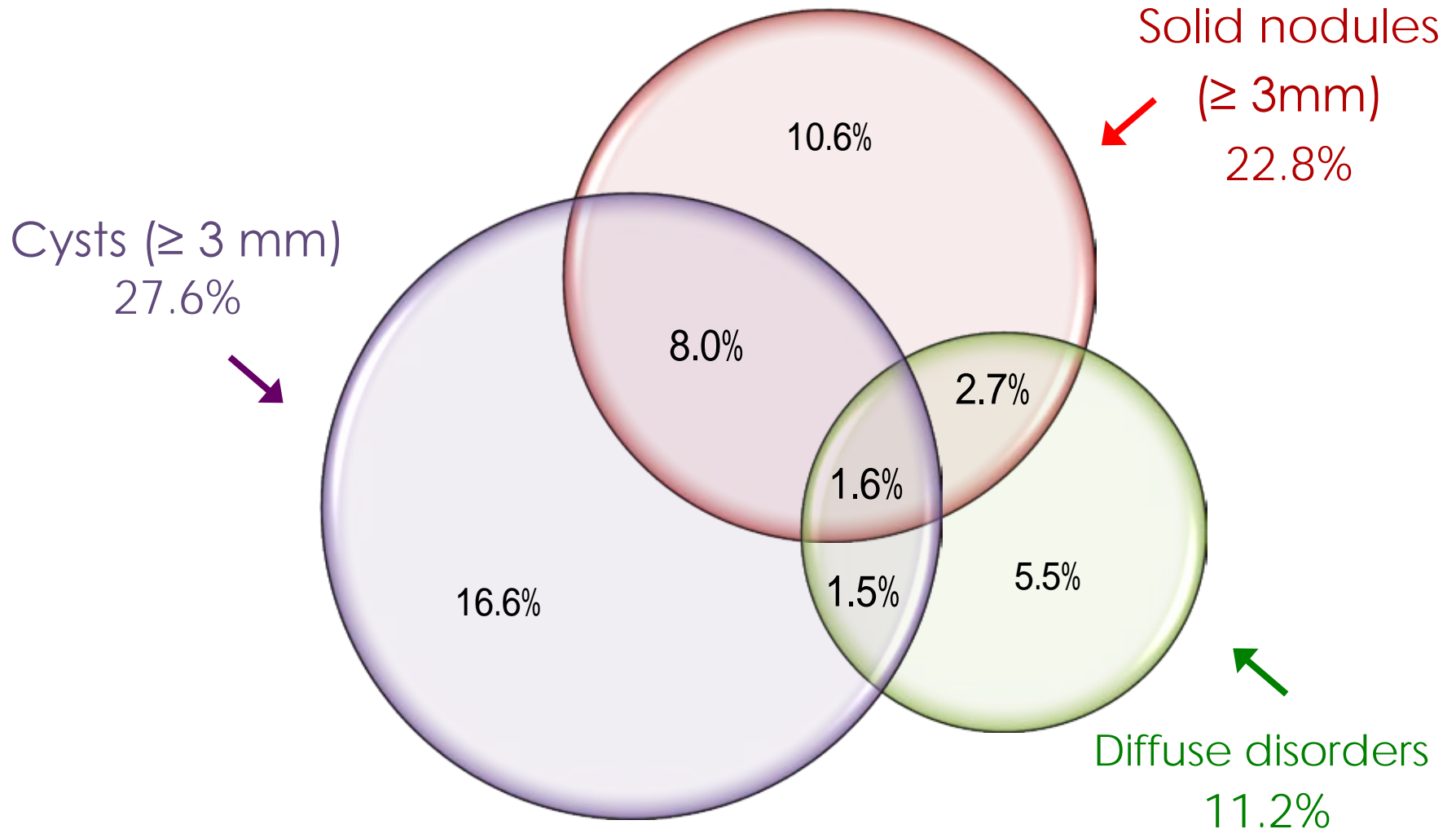


Dock

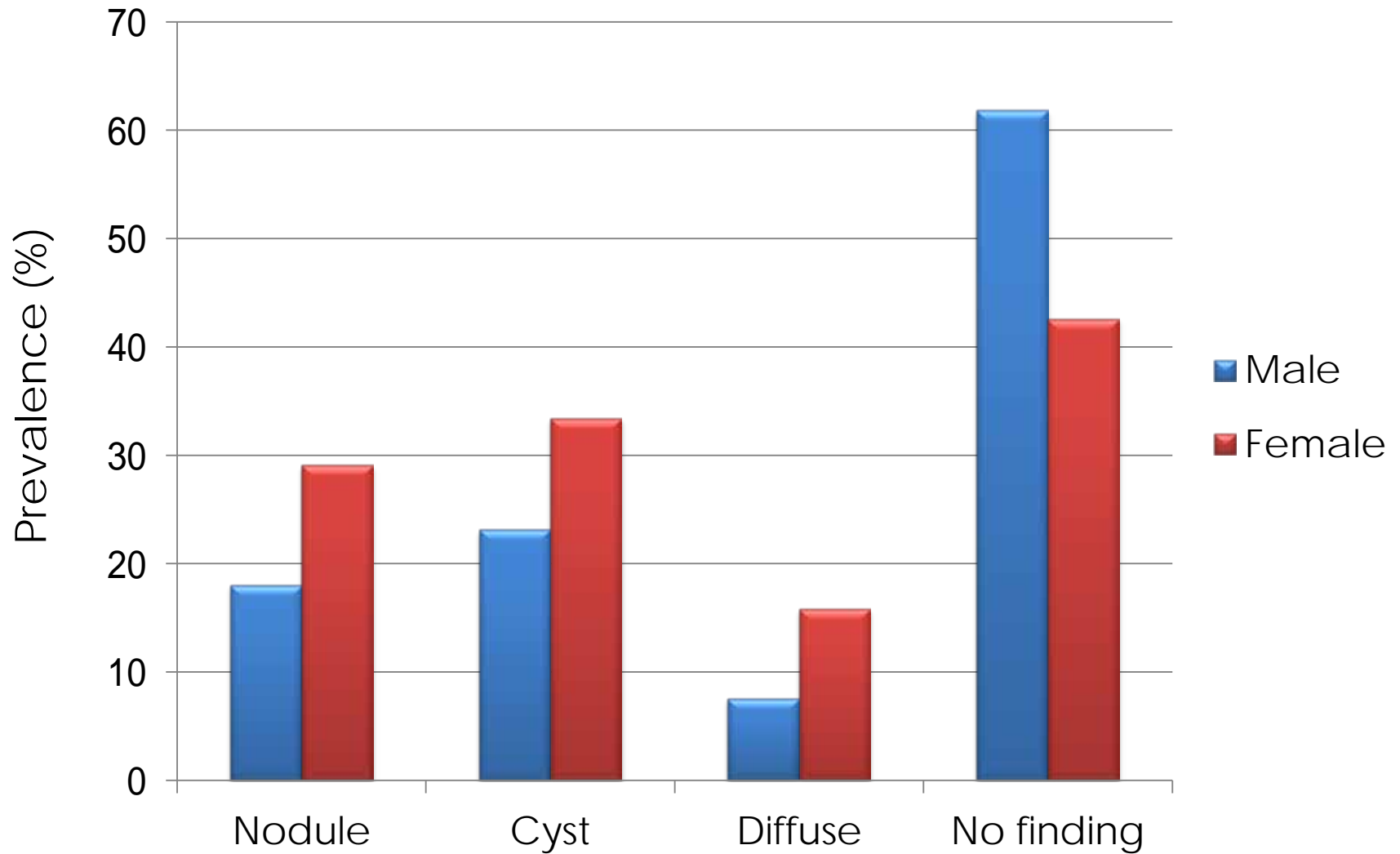
Japanese system of health checkup
with a comprehensive examination

Prevalence of ultrasound findings

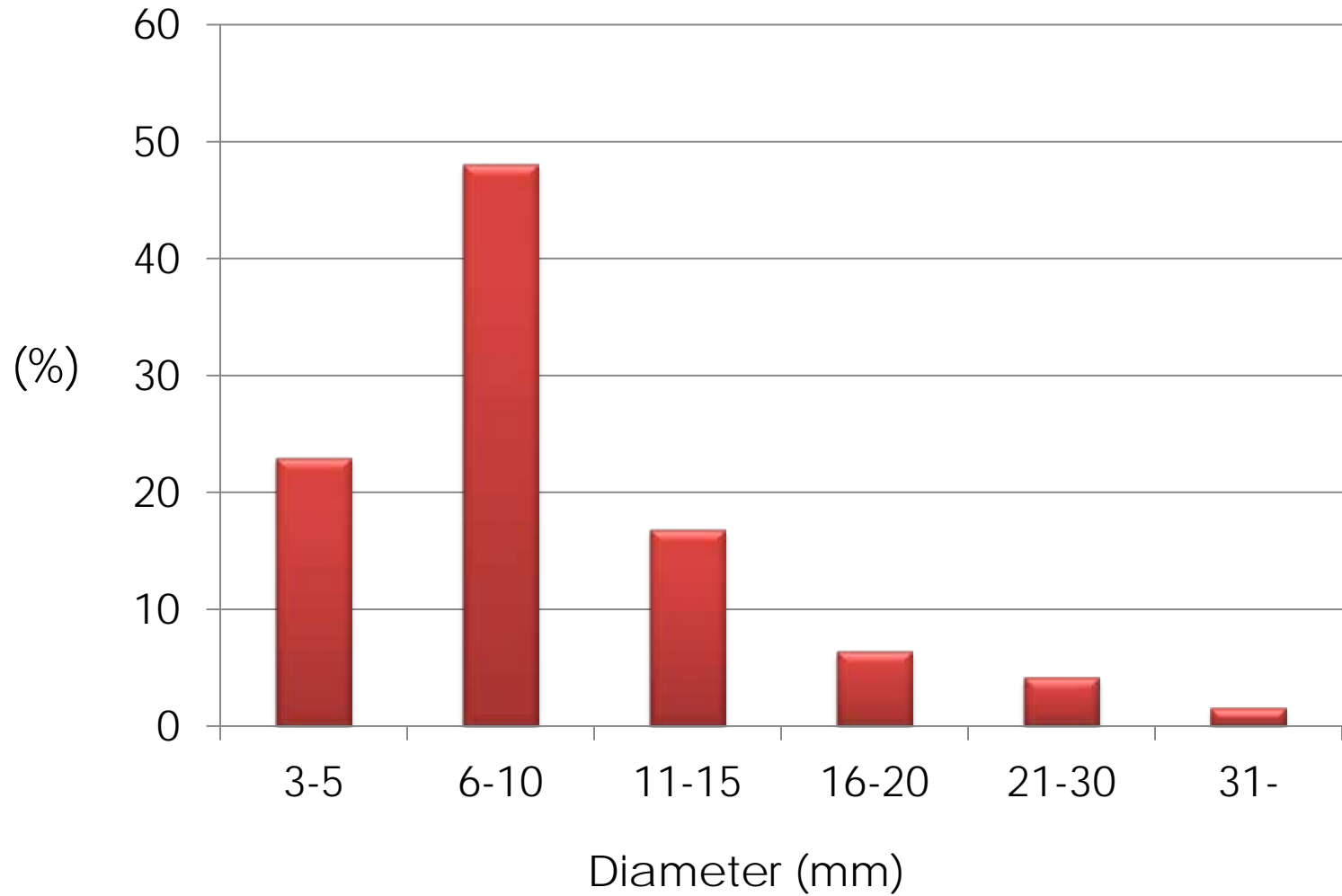
No finding: 46.4% of 21856 participants



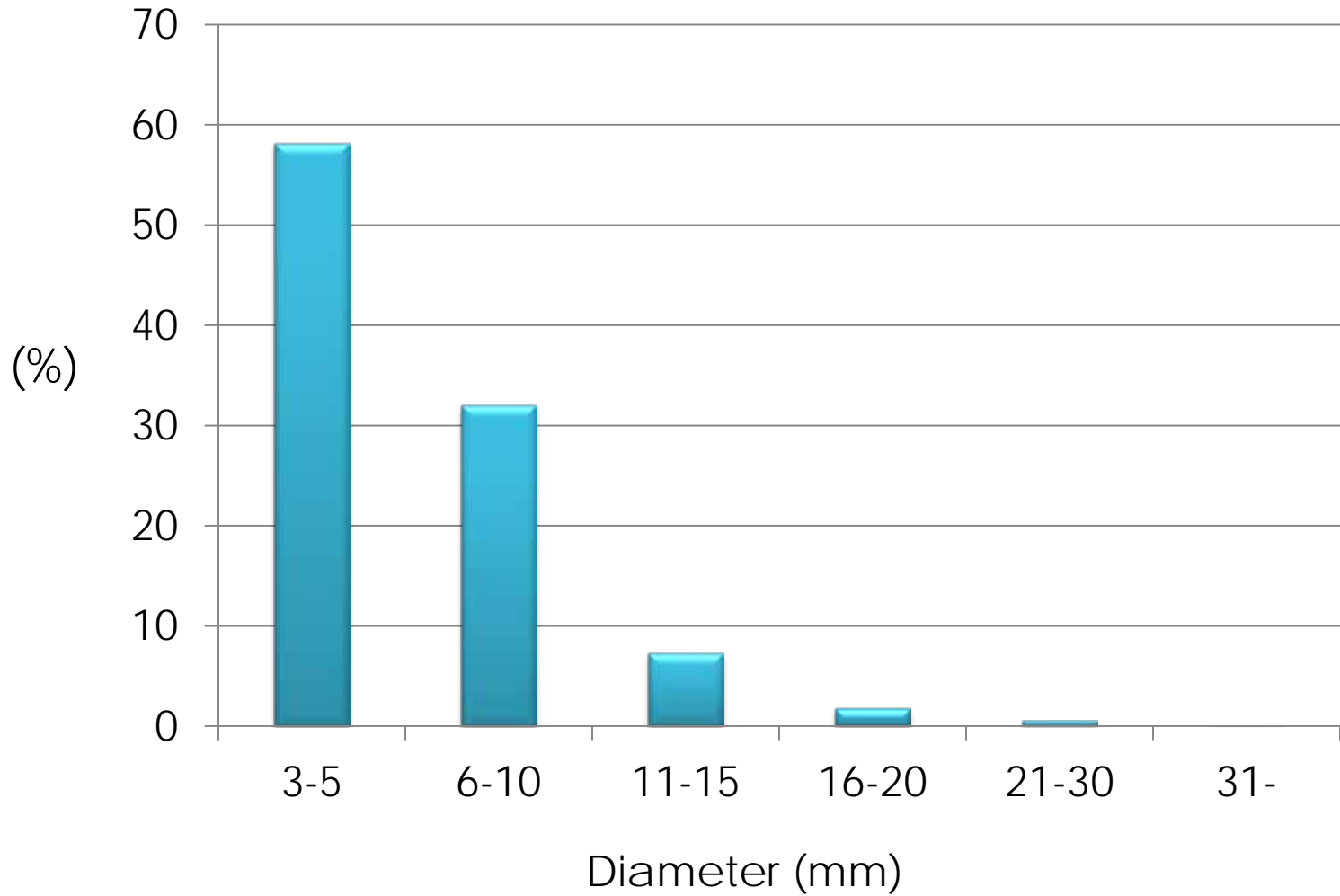
Prevalence of ultrasound findings classified by gender



Diameter of solid nodules

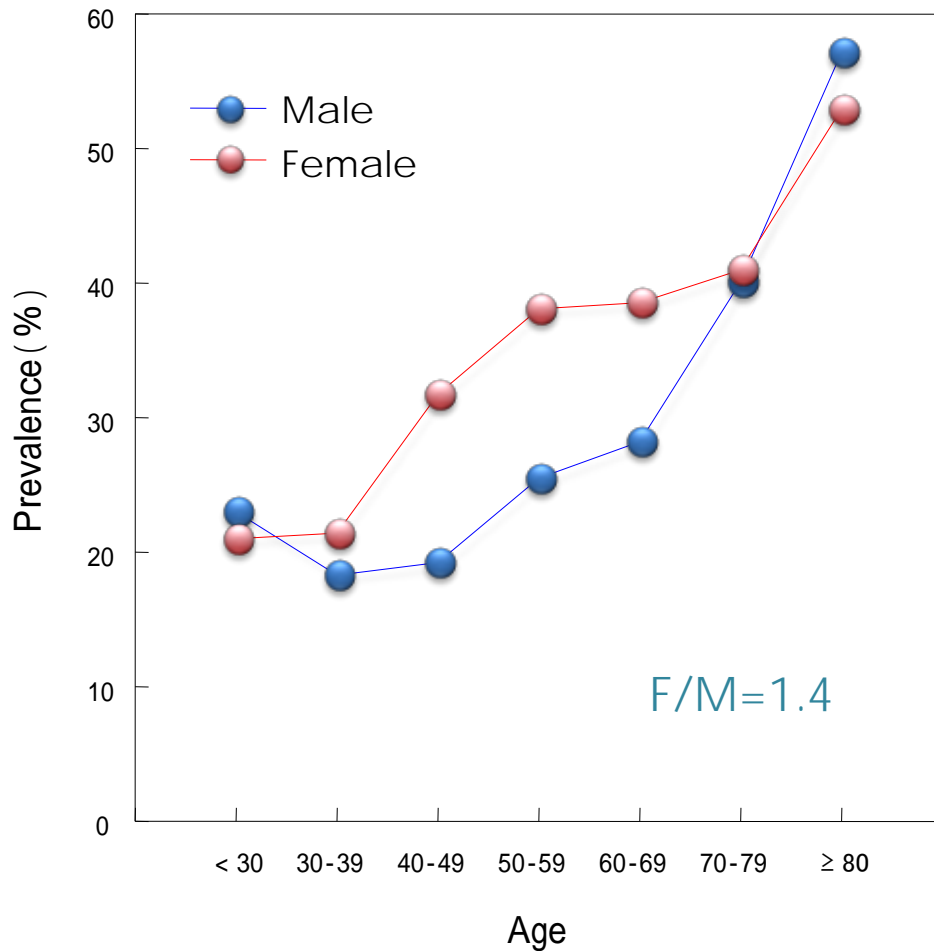


Diameter of thyroid cysts

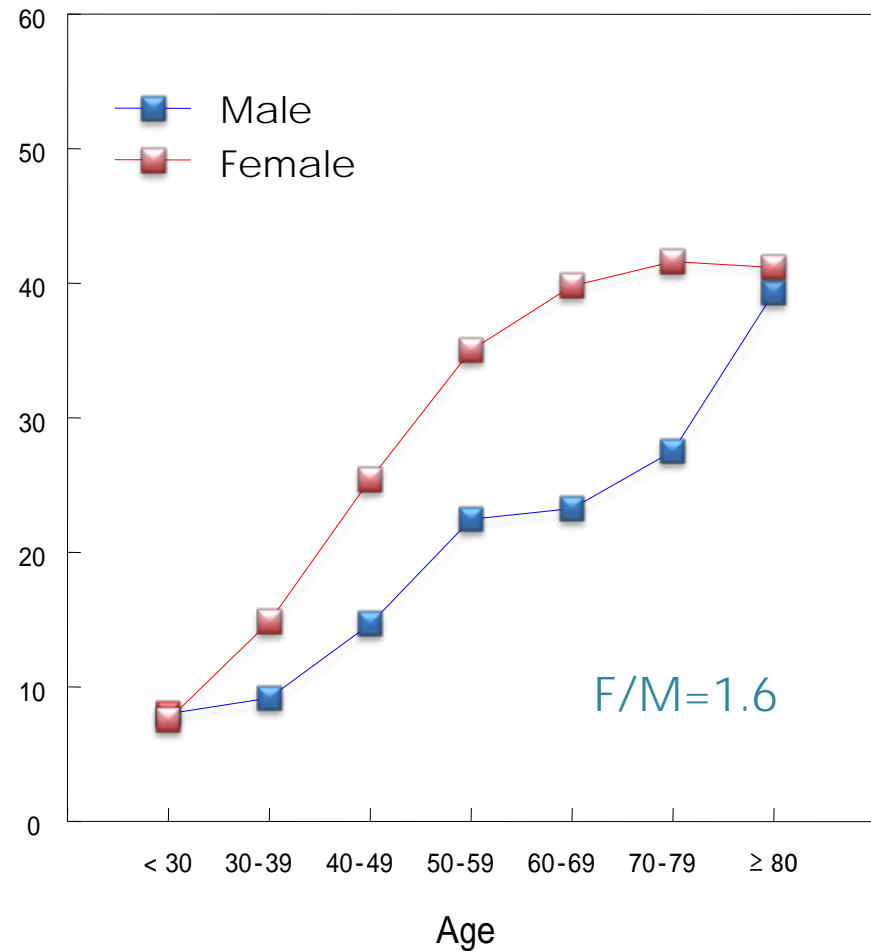


Prevalence of nodule and cysts classified by age groups

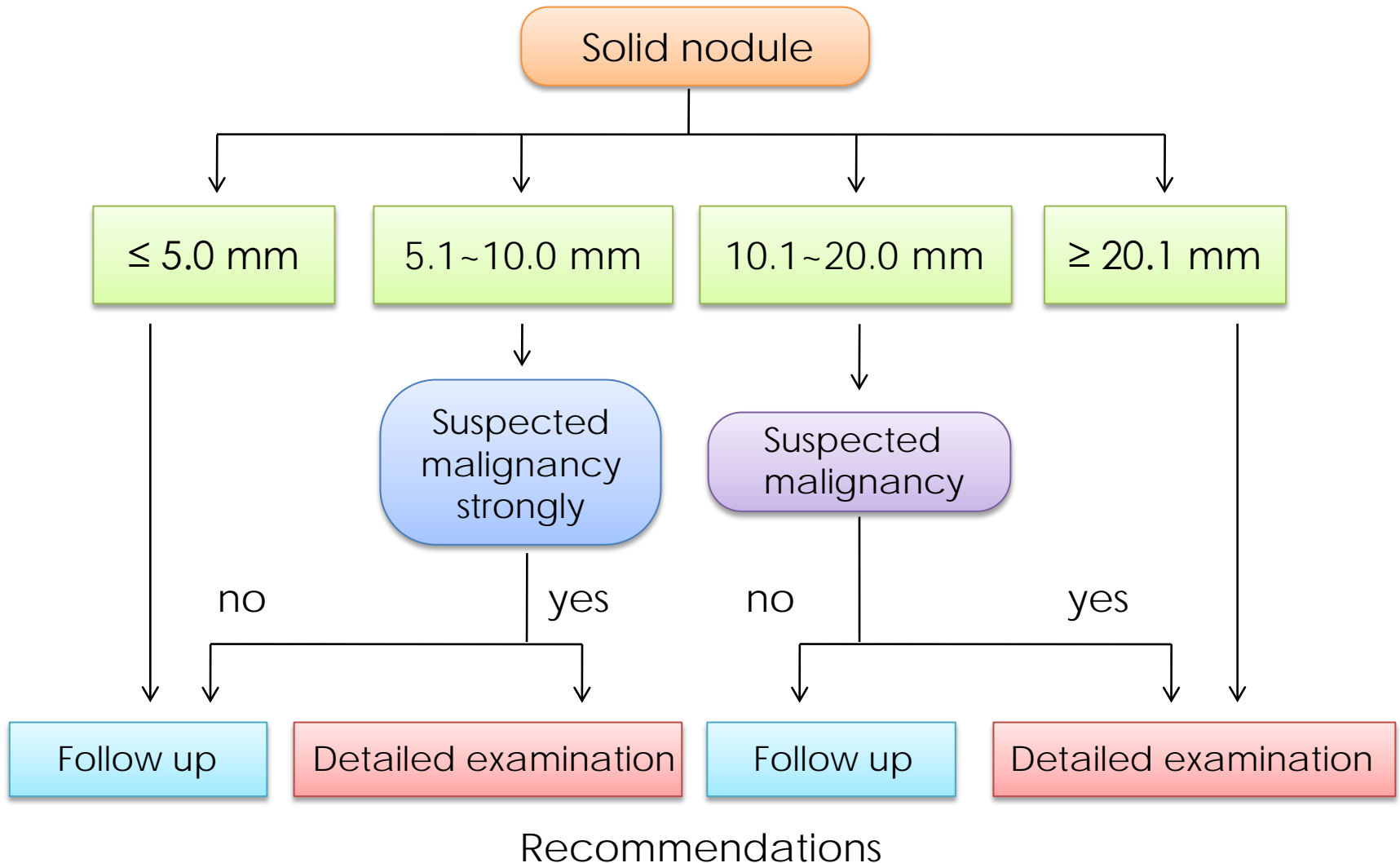
Cysts



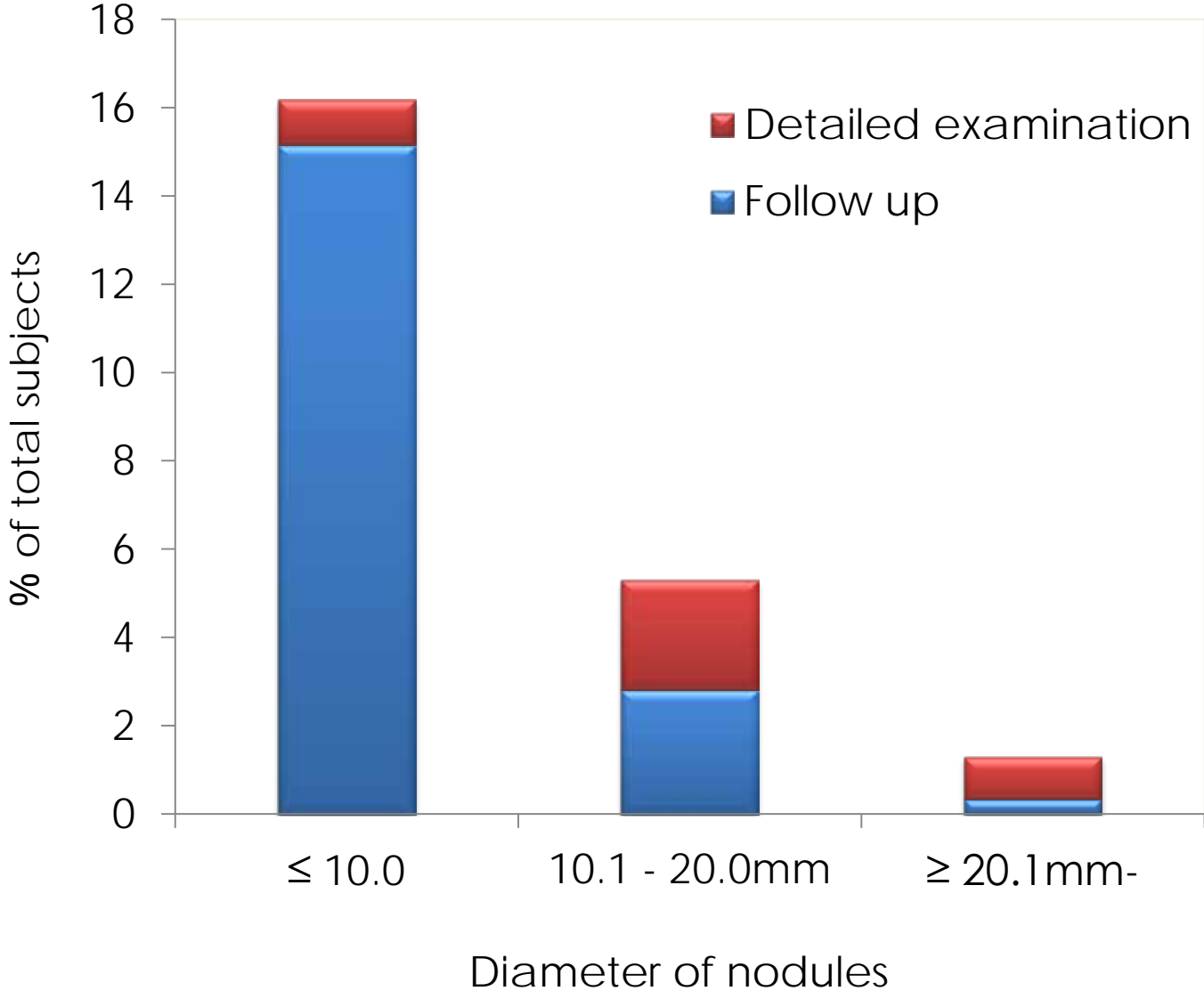
Solid nodules



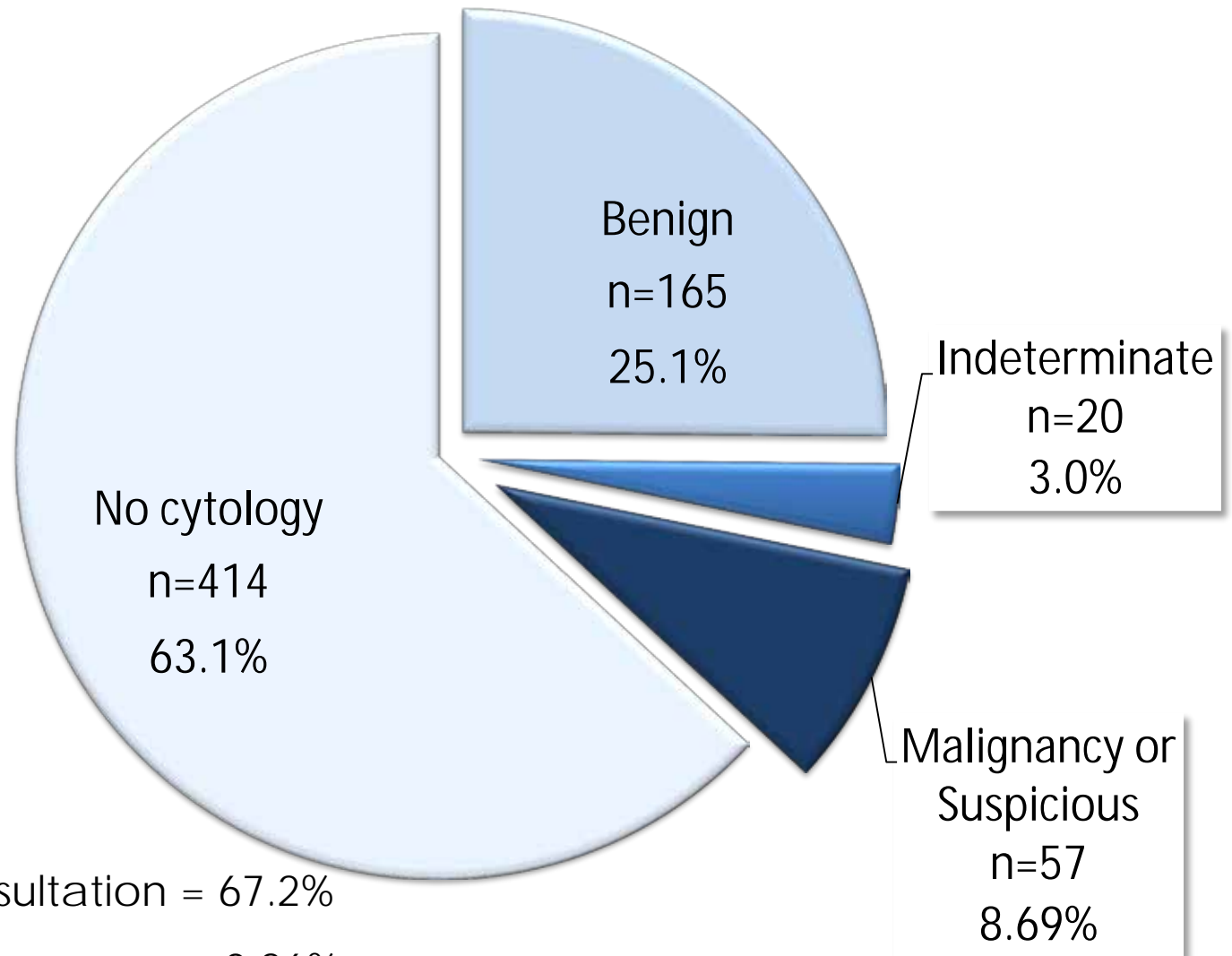
Flow chart for thyroid nodule management



Results of recommendation for management of thyroid nodules



Results of fine needle aspiration cytology

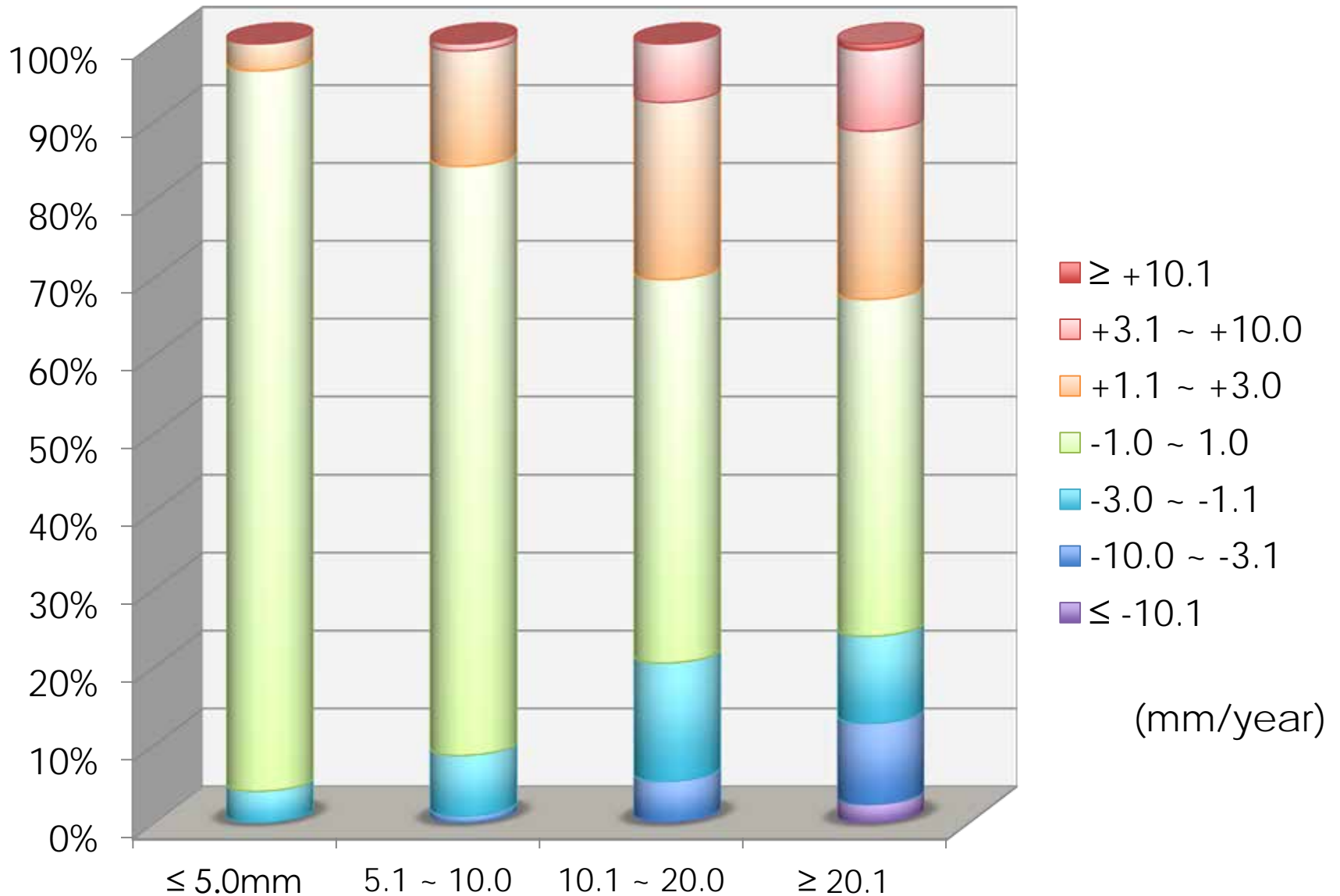


Percentage of consultation = 67.2%

Prevalence of malignancy = 0.26%

Estimated prevalence = 0.39%

Annual change in diameter of thyroid nodules



Characteristics of each diagnostic groups

	Benign	Indeterminate	Malignancy or Suspicious
Female/Male	1.39	1.00	1.03
Mean age	52 y/o	51 y/o	50 y/o
Diameter (mm)	16.8 ± 0.59	17.6 ± 1.68	14.7 ± 1.00
Change in diameter (mm/year)	0.22 ± 0.28	0.82 ± 0.87	1.33 ± 0.72*

* : p<0.05 in comparison with the benign group

Meta-analysis of the thyroid nodule and cancer prevalence

1. Methods

Analyzed reports

A. Palpation	13 reports from Japan 6 reports from other countries
B. Ultrasound	15 reports from Japan 12 reports from other countries
C. Autopsy	22 reports in the world (4 reports for Japanese subjects)

Totaled prevalence were calculated by sum of all subjects in these reports.

Meta-analysis of the thyroid nodule prevalence

2. Prevalence of thyroid nodules in Japan

Method	Gender	Reported prevalence	Total prevalence	F/M
Palpation	Male	0.2~8.3%	0.64%	2.6
	Female	1.0~4.1%	1.64%	
Ultrasound	Male	4.4~18.4%	16.7%	1.7
	Female	9.2~31.6%	27.9%	

3. Prevalence of thyroid nodules in other countries

Method	Gender	Reported prevalence	Total prevalence	F/M
Palpation	Male	0.17~1.5%	0.76%	4,1
	Female	0.77~4.2%	3.10%	
Ultrasound	Male	4.0~65.0%	20.4%	1.3
	Female	7.0~75.0%	26.9%	

Meta-analysis of the thyroid cancer prevalence

4. Prevalence of thyroid cancer in Japanese

Method	Gender	Reported prevalence	Totalled prevalence	F/M
Palpation	Male	0~2.6%	0.08%	2.3
	Female	0~0.6%	0.18%	
Ultrasound	Male	0.07~2.0%	0.27%	2.4
	Female	0.15~1.5%	0.66%	

Ratio of cancer prevalence (ultrasound / palpation)

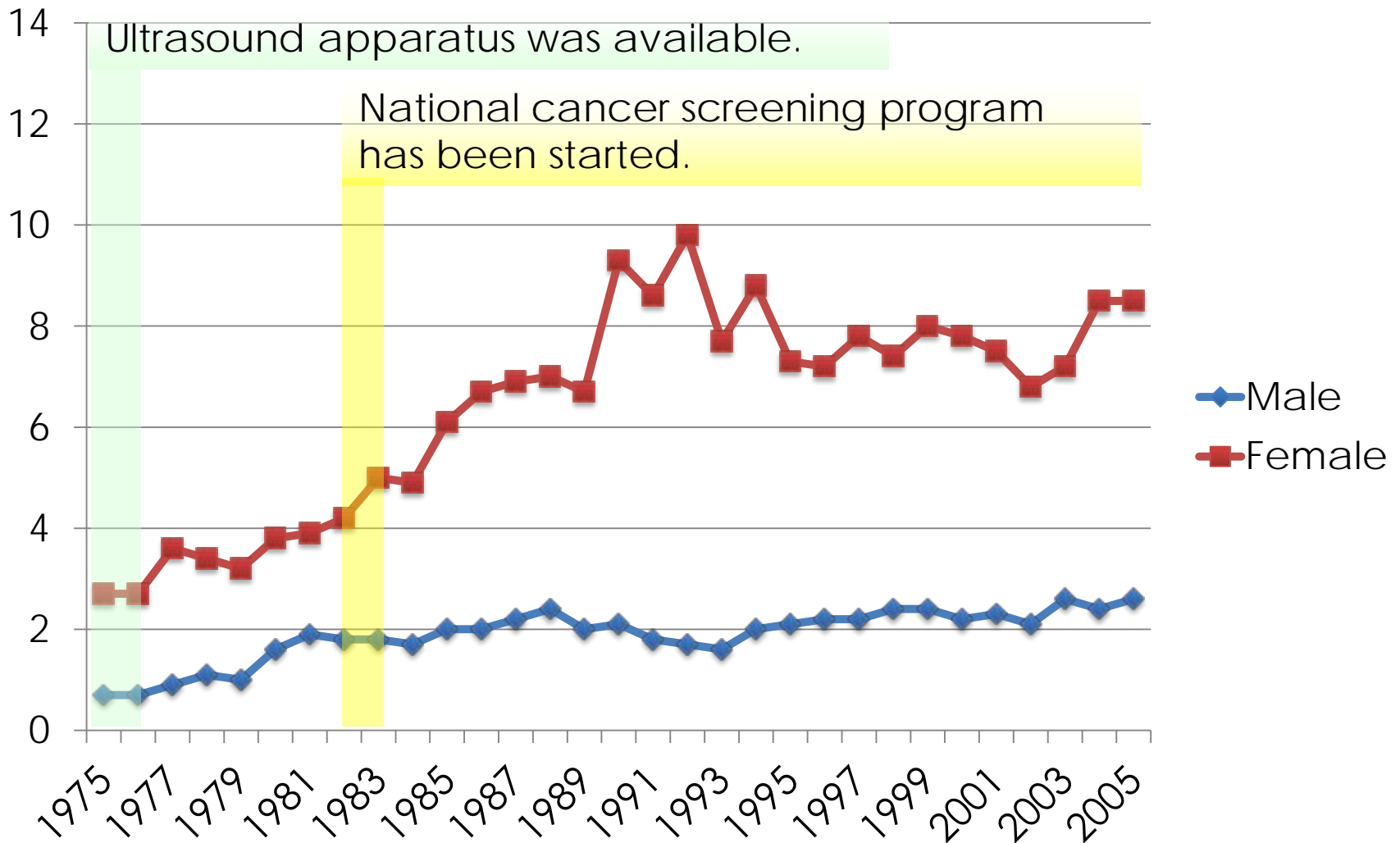
= 3.4 times in male and 3.7 times in female

Meta-analysis of the latent cancer prevalence

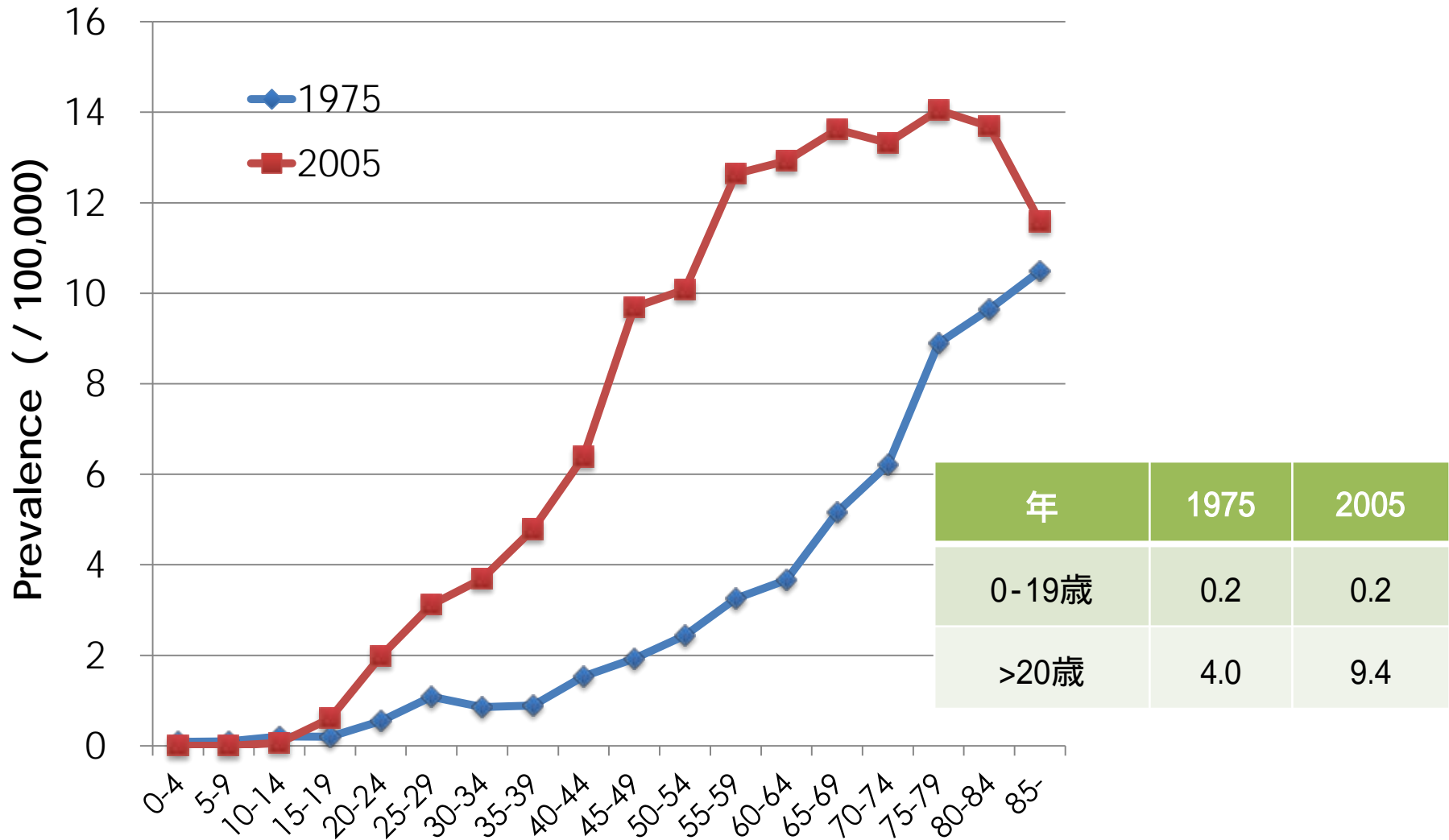
5. Prevalence of latent thyroid cancer identified by autopsy

Report	Gender	Reported prevalence	Totalled prevalence	F/M
All	Male	1.1 ~ 43.3%	10.1%	1.3
	Female	1.2 ~ 27.1%	12.8%	
Japanese	Male	10.5 ~ 27.1%	15.1%	1.2
	Female	12.4 ~ 30,2%	18.7%	

Thyroid cancer prevalence based on national cancer statics in Japan



Prevalence of thyroid cancer based on national cancer statics



Estimated number of thyroid cancer patients in adult

Method	Estimated no. of thyroid cancer (/ 100.000)	
	Male	Female
Self diagnosis (cancer statics in 1975)	1.8	5.7
Palpation	80	180
Ultrasound	270	660
Autopsy	15100	18700

Ratio	Male	Female
US / Self	150	116

Estimated number of thyroid cancer patients in childhood (0-19y/o)

	Male	Female
Cancer statics in 1975	0.00012%	0.00018%
Cancer statics in 2005	0.00013%	0.00021%
US/Self	150	116
Estimated prevalence in US based on data of 1975	0.018%	0.021%
Estimated prevalence in US based on data of 2005	0.020%	0.024%

Conclusions

- The prevalence of thyroid nodules and cancers were dependent on the method to examine, palpation, ultrasound, or autopsy.
- Since thyroid gland develops latent thyroid cancer with the extremely high incidence, careful interpretation is required to decide policies of the thyroid disease management.



ふくしまから
はじめよう。

Future From Fukushima.

Thank you very much for your attention