

Supplementary Table 1 China Sporadic Colorectal Cancer Risk Score

Risk factor	Criteria	Points¹
Age (year)	≤49	0
	50-59	1
	≥60	2
Gender	Female	0
	Male	1
Smoking	Never	0
	Yes	1
BMI (kg/m ²)	< 23	0
	≥ 23	1
Family history of colorectal cancer in a first-degree relative	No	0
	Yes	1
	A first-degree relative diagnosed with CRC before 60, or two first-degree relatives diagnosed with CRC.	2

¹Score 0-3: Low risk; Score 4-7: High risk

CRC: Colorectal cancer.

Supplementary Table 2 Asia-Pacific Colorectal Screening Score

Risk factor	Criteria	Points¹
Age (year)	<50	0
	50-69	2
	≥70	3
Gender	Female	0
	Male	1
Family history of colorectal cancer in a first-degree relative	Absent	0

	Present	2
Smoking	Never	0
	Current or past	1

¹Score 0-1: average risk; Score 2-3: Moderate risk; Score 4-7: High risk

Supplementary Table 3 Baseline of population, *n* (%)

Characteristics	<i>n</i> = 1154
Age (year)	46.49 ± 14.19
Sex	
Male	576 (49.9)
Female	578 (50.1)
BMI	23.35 ± 4.18
Colorectal lesions	
Colorectal adenoma	89 (7.7)
Colorectal cancer	18 (1.6)
Marital status	
Single	159 (13.8)
Married	995 (86.2)
Residences	
Lhasa	376 (32.6)
Shannan	95 (8.2)
Nyingchi	42 (3.6)
Shigatse	227 (19.7)
Chamdo	120 (10.4)
Nagqu	267 (23.1)
Ngari	27 (2.3)
Altitude of residences	
2000-3000m	57 (4.9)

3000-4000m	426 (36.9)
4000-5000m	654 (56.7)
>5000m	17 (1.5)
Education	
Below high school	909 (78.8)
High school and above	245 (21.2)
Smoking history	
No	984 (85.3)
Yes	170 (14.7)
Hypertension	
No	1060 (91.9)
Yes	94 (8.1)
Diabetes Mellitus	
No	1125 (97.5)
Yes	29 (2.5)
History of Abdominal Surgery	
No	1044 (90.5)
Yes	110 (9.5)
Family History of Colorectal Cancer	
No	1059 (91.8)
Yes	95 (8.2)
China Risk Score for Sporadic CRC	
Low risk	1034 (89.6)
High risk	120 (10.4)
Asia-Pacific Risk Score for CRC	
Average risk	531 (46.0)

Moderate risk	508 (44.0)
High risk	115 (10.0)

CRC: Colorectal cancer.

Supplementary Table 4 Detection rate of colorectal adenoma in different age groups, *n* (%)

	< 20	20-29	30-39	40-49	50-59	60-69	≥70	Statistic (χ^2)	<i>P</i> value
Group								21.05	0.002
Healthy	20 (100.0)	109 (98.2)	258 (95.6)	248 (92.2)	229 (89.8)	145 (89.0)	56 (84.8)		
CRA	0	2 (1.8)	12 (4.4)	21 (7.8)	26 (10.2)	18 (11.0)	10 (15.2)		

CRA: Colorectal adenoma.

Supplementary Table 5 Univariate analysis of clinical features in colorectal cancer patients, *n* (%)

	Colorectal cancer group (<i>n</i> = 18)	Control group (<i>n</i> = 1136)	Statistic (<i>t</i> / χ^2 / <i>z</i>)	<i>P</i> value
Age	52.83 ± 14.31	46.39 ± 14.17	-1.749	0.080
Age distribution			5.857	0.210
<40	2 (11.1)	399 (35.1)		
40-49	7 (38.9)	262 (23.1)		
50-59	4 (22.2)	251 (22.1)		

≥60-69	5 (27.8)	224 (19.7)		
Sex			0.233	0.629
Male	10 (55.6)	566 (49.8)		
Female	8 (44.4)	570 (50.2)		
BMI	22.34 ± 3.49	24.38 ± 4.18	-1.770	0.077
Residences			4.319	0.634
Lhasa	6 (33.3)	370 (32.6)		
Shannan	1 (5.6)	94 (8.3)		
Nyingchi	0	42 (3.7)		
Shigatse	5 (27.8)	222 (19.5)		
Chamdo	0	120 (10.6)		
Nagqu	5 (27.8)	262 (23.1)		
Ngari	1 (5.6)	26 (2.3)		
Altitude of residences			13.718	0.003
2000-3000m	1 (5.6)	56 (4.9)		
3000-4000m	14 (77.8)	412 (36.3)		
4000-5000m	3 (16.7)	651 (57.3)		
>5000m	0	17 (1.5)		
Smoking history			0.817	0.366
No	14 (77.8)	970 (85.4)		
Yes	4 (22.2)	166 (14.6)		
Hypertension			1.622	0.203
No	18 (100)	1042 (91.7)		
Yes	0	94 (8.3)		
Diabetes Mellitus			0.691	0.406
No	17 (94.4)	1108 (97.5)		
Yes	1 (5.6)	28 (2.5)		
History of abdominal surgery			0.053	0.818

No	16 (88.9)	1028 (90.5)		
Yes	2 (11.1)	108 (9.5)		
Family history of colorectal cancer			0.173	0.677
No	17 (94.4)	1042 (91.7)		
Yes	1 (5.6)	94 (8.3)		
China risk score for sporadic CRC			0.010	0.920
Low risk	16 (88.9)	1018 (89.6)		
High risk	2 (11.1)	118 (10.4)		
Asia-Pacific risk score for CRC			1.026	0.599
Average risk	7 (38.9)	524 (46.1)		
Moderate risk	8 (44.4)	500 (44.0)		
High risk	3 (16.7)	112 (9.9)		

CRC: Colorectal cancer; BMI: Body mass index.

Supplementary Table 6 Univariate analysis of clinical features in colorectal adenoma patients at 3000-4000 meters, *n* (%)

	Colorectal adenoma group (<i>n</i> = 38)	Healthy group (<i>n</i> = 388)	Statistic (<i>t</i> / χ^2 / <i>z</i>)	<i>P</i> value
Age	55.39 ± 12.76	46.37 ± 14.79	-3.582	<0.001
Age distribution			16.444	0.002
<40	3 (7.9)	140 (36.1)		
40-49	11 (28.9)	82 (21.1)		
50-59	10 (26.4)	85 (21.9)		
≥60-69	14 (36.8)	81 (20.9)		

Sex					1.596	0.206
Male	22 (57.9)		183 (47.2)			
Female	16 (42.1)		205 (52.8)			
BMI	24.69	±	25.60	±	-2.054	0.040
	3.50		4.08			
BMI>24.9					3.025	0.082
No	21 (55.3)		268 (69.1)			
Yes	17 (44.7)		120 (30.9)			
Residences					5.340	0.501
Lhasa	17 (44.7)		181 (46.6)			
Shannan	6 (15.8)		48 (12.4)			
Nyingchi	2 (5.3)		9 (2.3)			
Shigatse	8 (21.1)		73 (18.8)			
Chamdo	0		34 (8.8)			
Nagqu	5 (13.2)		41 (10.6)			
Ngari	0		2 (0.5)			
Smoking history					1.241	0.265
No	28 (73.7)		315 (81.2)			
Yes	10 (26.3)		73 (18.8)			
Hypertension					0.687	0.407
No	36 (94.7)		352 (90.7)			
Yes	2 (5.3)		36 (9.3)			
Diabetes Mellitus					2.002	0.157
No	36 (94.7)		381 (98.2)			
Yes	2 (5.3)		7 (1.8)			
History of abdominal surgery					0.616	0.432
No	36 (94.7)		353 (91.0)			
Yes	2 (5.3)		35 (9.0)			
Family history of colorectal					0.001	0.977

cancer					
No	36 (94.7)	368 (94.8)			
Yes	2 (5.3)	20 (5.2)			
China risk score for sporadic CRC			12.473	<0.001	
Low risk	27 (71.1)	350 (90.2)			
High risk	11 (28.9)	38 (9.8)			
Asia-Pacific risk score for CRC			8.973	0.011	
Average risk	12 (31.6)	173 (44.6)			
Moderate risk	16 (42.1)	175 (45.1)			
High risk	10 (26.3)	40 (10.3)			

CRC: Colorectal cancer; BMI: Body mass index.

Supplementary Table 7 Multivariate logistic regression analysis of variables in colorectal adenoma patients at 3000-4000 meters

Predictor variables	B	SE	Wal d	D f	P valu e	OR	95% CI	
							Low er	Upp er
Age	0.04 1	0.0 12	11.2 72	1	<0.0 01	1.0 42	1.01 7	1.06 8
BMI	0.05 4	0.0 41	1.70 4	1	0.19 2	1.0 55	0.97 3	1.14 4
Sex (male)	0.31 6	0.3 67	0.74 3	1	0.38 9	1.3 72	0.66 8	2.81 6
Smoke (yes)	0.50 4	0.4 22	1.42 7	1	0.23 2	1.6 56	0.72 4	3.78 6
Diabetes mellitus (Yes)	0.29 4	0.8 56	0.11 8	1	0.73 1	1.3 42	0.25 1	7.18 3
Family history of colorectal	-0.0	0.7	0.00	1	0.93	0.9	0.19	4.45

cancer (yes)	64	95	7	5	38	7	7
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BMI: Body mass index.

Supplementary Table 8 Univariate analysis of clinical features in colorectal adenoma patients at 4000-5000 meters, *n* (%)

	Colorectal adenoma group (<i>n</i> = 48)	Healthy group (<i>n</i> = 606)	Statistic (<i>t</i> / χ^2 / <i>z</i>)	<i>P</i> value
Age	50.67 ± 13.23	45.99 ± 13.83	-2.277	0.023
Age distribution			6.596	0.159
<40	11 (22.9)	219 (36.1)		
40-49	9 (18.8)	147 (24.3)		
50-59	15 (31.2)	127 (21.0)		
≥60-69	13 (27.1)	113 (18.6)		
Sex			13.544	<0.001
Male	37 (77.1)	300 (49.5)		
Female	11 (22.9)	306 (50.5)		
BMI	24.91 ± 3.59	24.76 ± 4.30	-0.843	0.399
BMI>24.9			0.440	0.507
No	24 (50.0)	333 (55.0)		
Yes	24 (50.0)	273 (45.0)		
Residences			6.683	0.351
Lhasa	18 (37.5)	141 (23.3)		
Shannan	2 (4.2)	36 (5.9)		
Nyingchi	1 (2.1)	16 (2.6)		
Shigatse	9 (18.8)	127 (21.0)		

Chamdo	6 (12.5)	66 (10.9)		
Nagqu	10 (20.8)	203 (33.5)		
Ngari	2 (4.2)	17 (2.8)		
Smoking history			0.054	0.815
No	40 (83.3)	546 (90.1)		
Yes	8 (16.7)	60 (9.9)		
Hypertension			0.035	0.852
No	44 (91.7)	560 (92.4)		
Yes	4 (8.3)	46 (7.6)		
Diabetes Mellitus			0.054	0.815
No	47 (97.9)	590 (97.4)		
Yes	1 (2.1)	16 (2.6)		
Family history of colorectal cancer			0.432	0.511
No	42 (87.5)	548 (90.4)		
Yes	6 (12.5)	58 (9.6)		
China risk score for sporadic CRC			6.869	0.009
Low risk	38 (79.2)	551 (90.9)		
High risk	10 (20.8)	55 (9.1)		
Asia-Pacific risk score for CRC			7.175	0.028
Average risk	15 (31.3)	292 (48.2)		
Moderate risk	25 (52.1)	265 (43.7)		
High risk	8 (16.7)	49 (8.1)		

CRC: Colorectal cancer; BMI: Body mass index.

Supplementary Table 9 Multivariate logistic regression analysis of variables in colorectal adenoma patients at 4000-5000 meters

Predictor variables	B	SE	Wald	Df	P value	OR	95% CI	
							Lower	Upper
Age	0.025	0.011	5.064	1	0.024	1.025	1.003	1.048
BMI	0.007	0.036	0.034	1	0.853	1.007	0.937	1.081
Sex (male)	1.178	0.359	10.797	1	0.001	3.249	1.609	6.563
Smoke (Yes)	0.409	0.25	0.923	1	0.337	1.505	0.654	3.464
Diabetes mellitus (yes)	-0.601	1.056	0.324	1	0.569	0.548	0.069	4.345
Family history of colorectal cancer (yes)	0.024	0.052	0.002	1	0.962	1.024	0.383	2.742

BMI: Body mass index.

Supplementary Table 10 Comparison of colorectal cancer detection rates between Beijing and Xizang populations, *n* (%)

	Study population (<i>n</i> = 3462)	Beijing population (<i>n</i> = 2308)	Xizang population (<i>n</i> = 1154)	Statistic (χ^2)	<i>P</i> value
Groups				0.238	0.626
Control group	3413 (98.6)	2277 (98.7)	1136 (98.4)		
CRC group	49 (1.4)	31 (1.3)	18 (1.6)		

CRC: Colorectal cancer.